Perfect cuts in plywood

The Family Handyman

September 2005

Dream Garage

A great workshop, a new floor and tons of storage—all of it organized!



Plus:

Kitchen too small? Remove a wall!

A new storm door in half a day

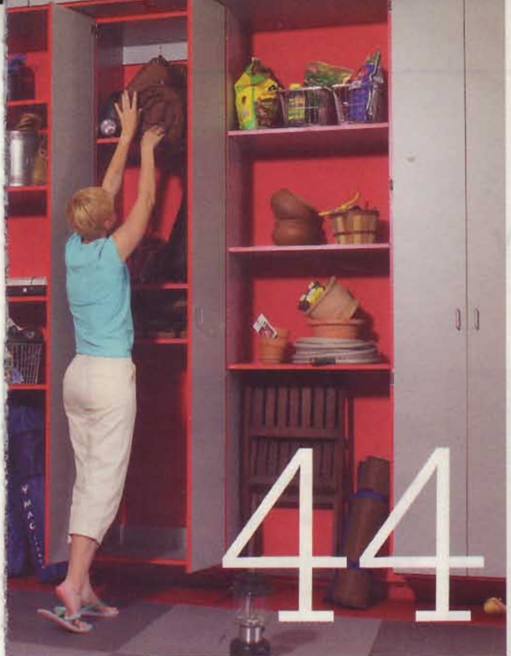
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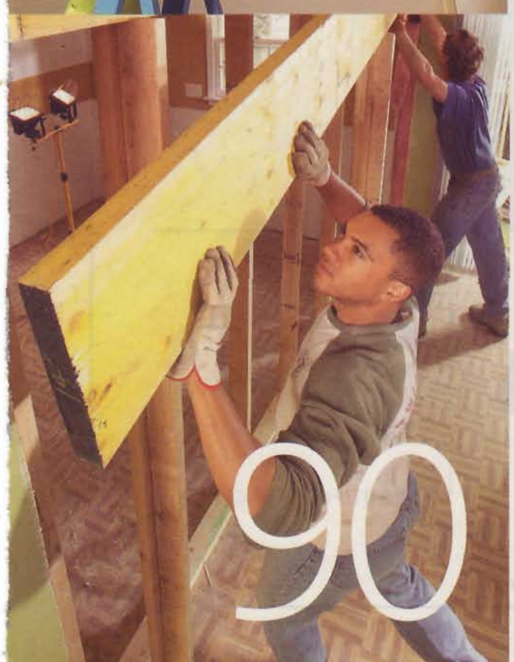
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Cover photo: Bill Zuehlke





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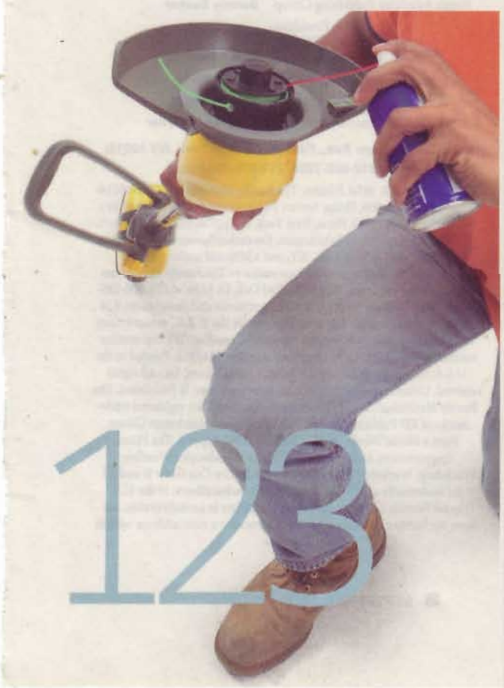
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Permanent solution

Pet-proof screen stands up to paws and claws



Installing heavy-duty screen is a lot easier than training your pet to stop pushing and clawing at the door or window. The toughest screen we know of is PetScreen, which is sold at home centers and online (www.improvementscatalog.com). A 36 x 84-in. roll costs about $20. Keep in mind that heavy screen has one drawback: It blocks sunlight and your view more than standard screen.

Heavy-duty screen is installed just like any other screen. If your screen is in a wooden frame, you'll have to carefully remove moldings and pry out staples to remove the old screen. Then staple the new screen into place, stretching it tight as you go. Replacing screen in a metal frame may look more complex, but it's actually faster and easier. All you need are scissors, a utility knife, clamps, a nail set, a spline roller ($4) and spline ($3). Spline comes in three sizes; take a piece of the old spline to the home center to match the thickness. These replacement steps take about 15 minutes:



1 Pull out the old spline and remove the old screen. Cut a new piece of screen about 4 in. wider and longer than the old one. Also cut four pieces of new spline, making each a couple of inches longer than the sides of the frame.

Repair

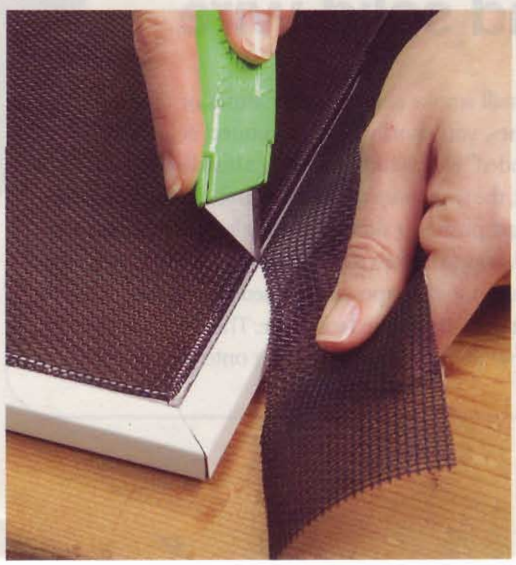
by Gary Wentz



2 Clamp the screen to one long side of the frame. On the opposite side, roll the spline into the groove, stretching the screen as you go. Remove the clamps and add spline on the other side. Repeat the process on the short sides.



3 A spline roller has a concave wheel and a convex wheel. Use the concave end first. When all four splines are in place, roll them again, this time with the convex wheel.



4 Trim off the excess screen with a utility knife. Put a sharp new blade in the knife and pull it carefully along the spline.



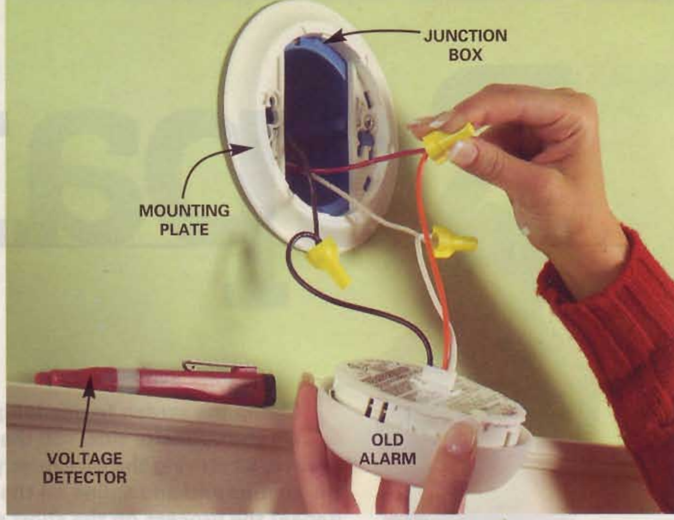
Preventive maintenance

Slime-eating bacteria clean constricted pipes

The insides of drain lines are coated with a gunky mix of soap scum, grease, food particles and other stuff you don't want to know about. The coating builds up gradually and eventually becomes thick enough to slow down drains and make clogging more likely. Drain slime can be a headache for you, but for bacteria, it's a feast. Many home centers and hardware stores carry "enzyme" powders or liquids that contain harmless, dormant bacteria. You just mix them with water and dump the potion down your drain. The bacteria then wake up, eat slime and multiply. This won't dissolve hair clogs or open drains that are completely plugged, but it's a preventive step that can keep drains wide open and flowing freely. If you can't find enzyme drain cleaners at your local store, go to www.cornerhardware.com (877-825-1497) and type "enzyme" in the search box. A $10 container (item No. DC-16) provides about 40 treatments. Some manufacturers recommend monthly use, but we've heard from pros who have had good results with just three treatments per year.

Home safety

Replace old smoke alarms



1 Turn the power off. Remove the alarm and use a non-contact voltage detector to check the wires to make sure the power is off. Disconnect the wires and unscrew the mounting plate from the junction box.

If the smoke alarms in your house are 10 years old or more, it's time to replace them. To get started, remove each alarm from its mounting plate. Most alarms have arrows that tell you which way to rotate the alarm for removal. You may have to use both hands and twist hard.

If you find that your alarms are connected to wires, don't be intimidated. Replacing a "hard-wired" alarm is almost as easy as replacing a battery-powered version. New alarms cost $10 to $15 each. If your old alarms are connected to three wires as shown here, that means the alarms are interconnected—when one alarm detects smoke, they all howl. To ensure that your new alarms will work together, buy alarms of a single brand and model and replace them all at the same time. You'll also need a non-contact voltage detector ($10; **Photo 1**) and a wire strippers ($7).

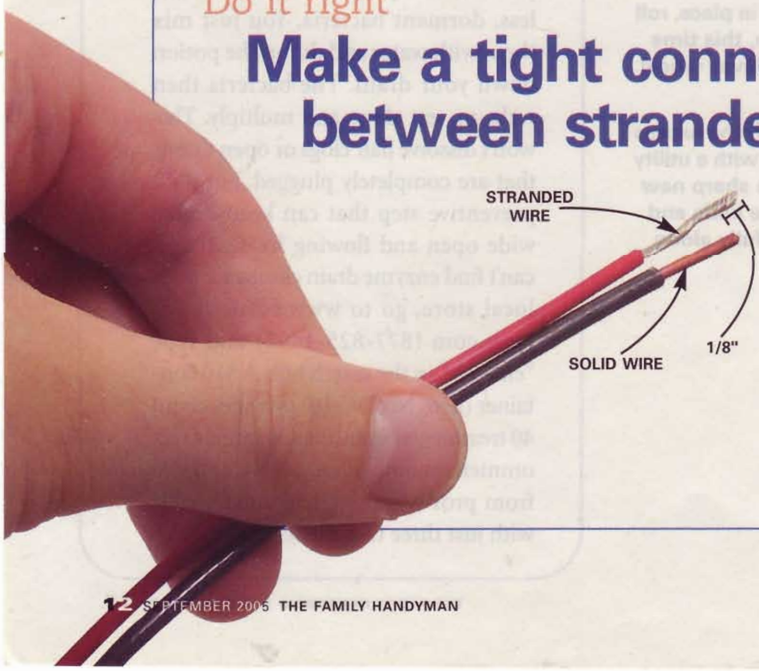
Turn off the power at the main electrical panel and disconnect the old alarm (**Photo 1**). Check to make sure the power is off with your voltage tester. If the wires *aren't* connected as shown here (with each wire connected to another of the same color), make a simple sketch so you can connect the new alarm the same way. Your old alarm may be connected to two wires instead of three. Your new alarm will have a third "interconnect" wire (usually red or orange), but leave it unconnected if the old alarm had just two connections. Check the manufacturer's instructions for other details. Write "replace in 2015" (when it's 10 years old) on the alarm's back or mounting plate. Turn the power back on and push the alarm's test button. If you connected three wires to each alarm, they should all sound at the same time.



2 Screw the new mounting plate to the junction box and connect the wires. Plug the harness into the new alarm, stuff the wires into the box and mount the alarm on the plate.

Do it right

Make a tight connection between stranded and solid wire





To install smoke alarms, light fixtures or dimmer switches, you usually have to connect solid wire to "stranded" wire, which is actually a bundle of tiny wires. Often, the wire connector doesn't grab the stranded wire but just pushes it down, creating a poor connection. Here's how to make a reliable connection: Strip off extra insulation so the exposed stranded wire is about 1/8 in. longer than the exposed solid wire. Then twist the strands together and screw the connector onto both wires.

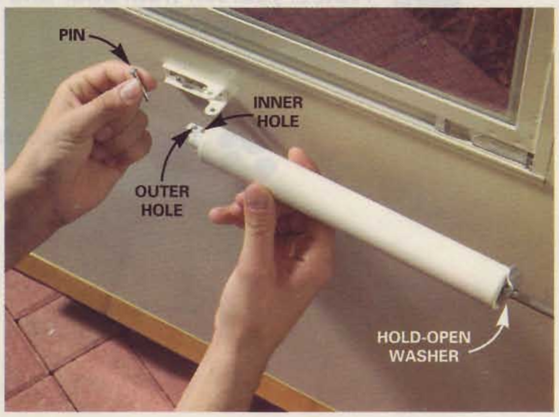
Nuisance stopper

Adjust a storm door for a perfect close

If your storm door slams shut or won't close hard enough to latch, try a few simple adjustments to make it close just right.

First, change the mounting position of the closer's connecting pin (**Photo 1**). To remove the pin, you have to first lock the door open with the hold-open washer to release the tension on the pin. But there's a good chance that your hold-open washer won't work. In that case, open the door and snap a locking pliers (such as a Vise-Grip pliers) onto the closer shaft to hold the door open. To repair the washer, slip it off the shaft, put it in a vise and make a sharper bend in it using a hammer. Or you can take the entire closer to a home center or hardware store and find a similar replacement for about $10. Some closers mount a little differently from the one we show. For example, you may find that the door bracket, rather than the closer, has two pinholes.

If moving the pin makes matters worse, return it to its original position and try the adjustment screw (**Photo 2**). Turn it clockwise for a softer close, counterclockwise for harder. If your door has two closers, treat them exactly alike. Adjust both screws equally and make sure their pins are in the same position.



1 Lock the door open and remove the pin. Connect the closer at the inner hole to make the door close harder. For a softer close, use the outer hole.



2 Turn the adjustment screw to make the door close harder or softer. Make a quarter turn, test the door and continue making quarter turns until the door closes just right.



5-minute fix

Blend fillers to patch laminate floors

If your laminate floor has a few chips, gouges or deep scratches, you'll like this good news: Home centers carry fillers especially for laminate floors ($6). There are colors intended for specific brands of flooring, but you don't have to run around hunting for an exact match. With a little experimentation, you can blend colors for a nearly perfect patch. Different areas of the floor may require different mixes. Apply the filler with a plastic putty knife to avoid scratching the floor.

Art Direction • RICK DUPRE
Photography • BILL ZUEHLKE
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AskTFH

The Family Handyman by Duane Johnson

Heat loss in cathedral ceilings

Q Our kitchen has a cathedral ceiling with IC (insulation contact) rated recessed lights. You can see the frost on the roof melt over each of them on cold mornings. Can I seal the holes in the cans with tape to make them more energy efficient?

R.F., Columbus, OH

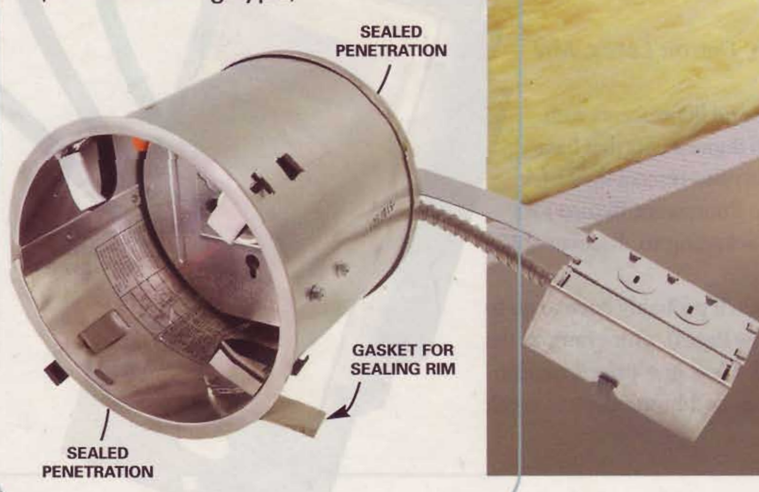
Your fixtures aren't airtight unless they have an "airtight" rating. But don't plug the holes (**see photo**). Manufacturers submit fixtures to Underwriter's Laboratories (UL) to receive a safety rating for their designated use. (You'll see a UL rating somewhere on the fixture.) Altering the fixture in any way may compromise its margins for safety.

But you raise a real issue. Recessed lights in cathedral ceilings waste the heat from the light bulb and the warm air that leaks through the fixture. Even worse, moist, warm air will flow up against the cold roof sheathing (**see photo**). Chances are that it'll condense there, wet the wood

Recessed light in cathedral ceiling



Airtight recessed fixture (IC remodeling type)



and eventually cause rot. Unfortunately, there isn't any easy way to know if you have moisture problems and rot until you find water dripping from the ceiling, stains or soft spots in the drywall. The fix is expensive.

Builders often try to prevent the problem by leaving a 1- to 2-in. airspace for roof ventilation (**see photo,** p. 17). Roof venting can help dry the wood again in warmer weather, and it'll flush out some of the moisture in cold weather. But it often doesn't work well.

The best solution is to avoid putting any recessed lights in cathedral ceilings. However, if you want them, use type IC "airtight" fixtures (available for $20 at lighting stores and home centers). These fixtures are sealed to stop airflow. In addition, they have gasketed edges to seal them to the drywall.

Replacement can be challenging. If you're lucky, you can pull the old mounting bracket out through the existing hole. Otherwise you have to tear open the ceiling. We recommend that you hire a licensed electrician for this tricky job.



Mystery photo

Q I noticed this white material on the bricks of our chimney. Should I worry about structural damage, or is it just discoloration?

Paul Di Liello, Cortland, OH

A The white material is a powdery mass of minerals called efflorescence. Efflorescence occurs when moisture moves through concrete or other masonry. The moisture picks up minerals, carries them to the surface of the masonry and leaves them behind in the form of tiny crystals on the surface as the moisture evaporates. The minerals themselves do no harm. You can simply brush them away.

A small amount of efflorescence is common. But the amount of efflorescence on your chimney is excessive and cause for concern. Some could be caused by rainfall soaking into the brick. But more likely—and more serious—the problem is moisture in warm air from inside the house condensing on the interior of the chimney during cold weather. Or more alarming, your flue liner is cracked or broken and moist combustion gases from your furnace and water heater are leaking out onto the cold brick and condensing. This is a bad condition that will cause rapid brick and mortar deterioration. We recommend that you have your chimney inspected by a licensed heating contractor or by a certified chimney sweep before the heating season begins this year. Either one will tell you whether you have to install a new chimney flue or liner, or point to any other moisture source that may be causing the excessive efflorescence.

Fluorescent switch frustration

Q Help! I bought a motion-activated switch for my garage that was supposed to work with fluorescent lights, but it doesn't.

Alan Ferguson, Detroit Lakes, MN

A Your switch is probably rated for incandescent lights and fluorescents with *magnetic* ballasts. Unfortunately, it won't work with fluorescents that have *electronic* ballasts, which are now common in better-quality fluorescent lights. (A ballast is the small metal box that modulates voltage in a fluorescent fixture.) It's irritating, but you have to read the fine print on the packaging to discover this limitation.

To find a switch that'll handle both types of ballasts, you'll probably have to go to an electrical supply store ("Electrical Supply" in your Yellow Pages). Our example, the Leviton model No. ODS15 (or ODS10), costs about $60. Most low-priced motion-activated switches ($15) that you find at hardware stores and home centers aren't rated for electronic ballasts.


MOTION-ACTIVATED SWITCH

Missing parts

Q I have a wood patio door that needs a new lock. The only replacements I can find are for aluminum doors. Help! I don't want to buy a new door.

Leslie Ewen, Millville, NJ

A Few stores carry old window and door hardware. But one good source is Blaine Window Hardware Inc. You can check through many of the company's thousands of parts at its Web site, www.blainewindow.com, or call (800) 678-1919.

Dusty concrete

Q I get a lot of fine dust when I sweep my concrete basement floor. What can I do to eliminate this problem?

J. Jones, Parkersburg, WV

A Apply a clear penetrating concrete sealer (available at home centers). One coat should do it, but you can reseal every four to five years if the dust recurs.

Prepare the floor by sweeping it and then washing it with a concrete cleaner/degreaser. Any oil or grease spots will resist the sealer, so concentrate on areas where water beads up. Let the floor dry before you apply the finish. Look for water-based, low-odor products and make sure the area is well ventilated. Read and follow the label instructions for application.

Do you have a mystery photo or a question? Send it to Ask The Family Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121. Include your name, address and phone number. Sorry, we can't respond to each question personally.



The sound of mice—or popping siding?

Q Off and on we hear something inside the walls of our home, usually the south wall. It sounds like an animal (mouse or chipmunk) running inside the wall. Is the sound caused by the vinyl siding expanding and contracting?

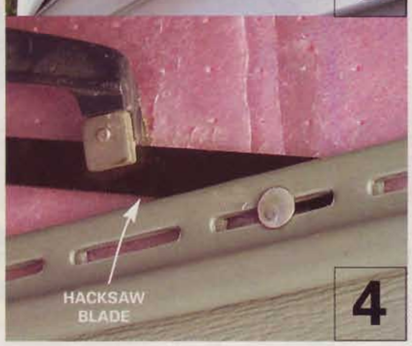
Stuart Gelb, via e-mail

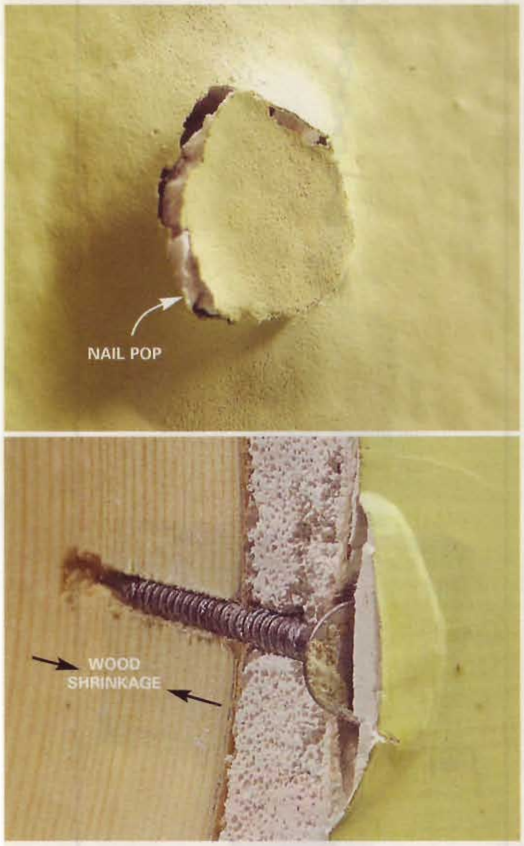
A That's probably right. Chances are that your vinyl siding was nailed too tightly. Vinyl siding tends to expand and contract considerably with temperature changes. For this reason, manufacturers design it to hang loosely on the nails rather than to be tightly nailed like wood siding.

Your problem should be easy to diagnose. Simply go outside, grab the lower edges of a siding course and try to slide it back and forth (**Photo 1**). Manufacturers require about 1/4-in. play at both ends, so if it's nailed properly (loosely), you should be able to slide it 1/4 to 1/2 in. If all the siding is tight, it was installed wrong and should be redone. If only a few pieces are tight and you can't find the contractor who installed it, buy an unlocking ("zip") tool and unfasten the section above, exposing the nails (**Photos 2 and 3**). Find the tight nails and cut them (**Photo 4**). Renail right next to the old nail, leaving at least a 1/16-in. gap between the nailhead and the vinyl to allow easy movement.









Nail pops in drywall

Q I recently spotted a number of bumps on the wall between my dining room and garage. The bumps occur over nailheads. How can I stop this?

Phil Mischke, York, PA

A Nail (and screw) pops usually occur in new construction after about six months, when new studs and other framing members have had a chance to dry. As the studs dry, they shrink slightly and push the drywall nails or screws back out through the face of the drywall. The movement is slight, less than 1/32 in. But that's enough to leave a noticeable bump in a nicely painted flat wall, or even pop off the drywall compound that covered the fastener.

Nail pops also can occur if a wall experiences wide swings in relative humidity over the course of several years. Studs swell slightly when the relative humidity is high for a prolonged period and shrink when it drops again. This repeated pattern can gradually back a drywall nail or even a screw out of the wood.

I suspect that this long-term swelling/shrinking cycle is causing the nail pops in the wall between your house and the garage. It's probably the result of prolonged periods of high relative humidity in the garage.

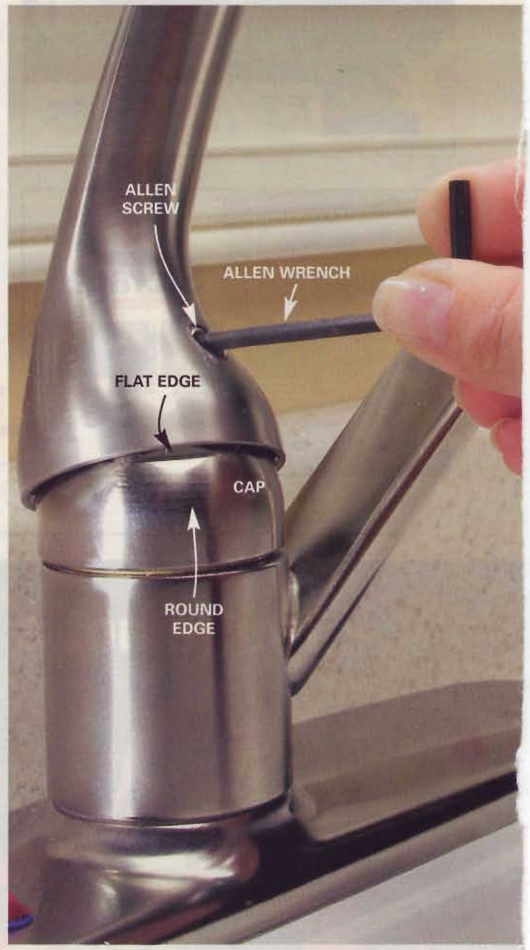
To fix the problem, scrape the drywall compound off one of the fasteners to make sure it's a nail. If so, drive a new drywall screw into the stud about 2 in. away, then pull the nail. Screws resist withdrawal much better than nails. Use screws that penetrate the wood no more than 3/4 in. Longer screws (and nails) are more likely to pop than shorter ones. Do this at all spots with pops. Then fill the holes with compound and repaint the wall.

Stuck screw on a drippy faucet

Q Your article on fixing drippy faucets (July/Aug. '04) was great, but you missed one problem. We can't loosen the Allen screw to remove the handle from our rotary ball faucet. Should we give up and buy a completely new faucet?

Kathy Martell, via e-mail

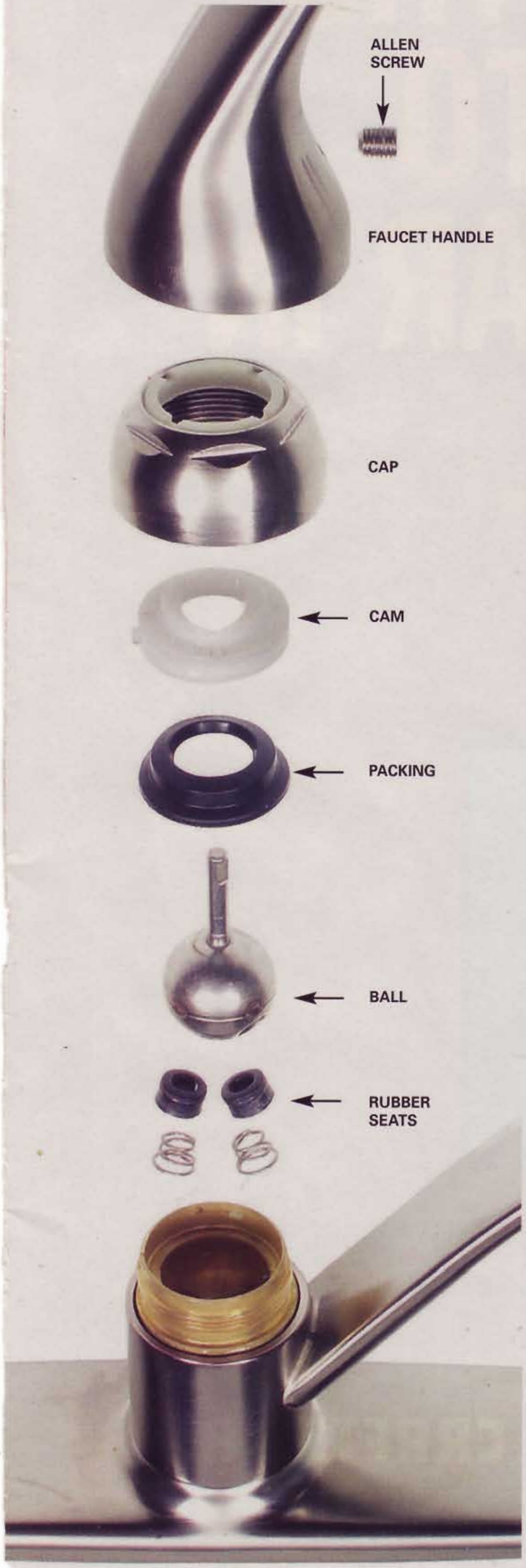
A Don't let that 15¢ screw force you into a $100 faucet replacement... just yet! Normally you have to remove the handle to get the worn rubber seats that cause the drip (**Figure A**). First try spraying the screw with penetrating oil every day for a week. Then try the screw to see if it'll come (**Photo 1**). If this doesn't do it, or if you finally strip the head of the Allen screw, try drilling out the screw. Use a bit about the same size as the screw and work carefully. You'll ruin the handle and have to replace it, but it's well worth it if you can save the valve. As a final resort, you can actually unscrew the cap with the handle still connected (see **Figure A** for the parts).



If the Allen screw is stuck, or if you strip it so it won't come out, remove the cap with the handle still in place. You can't grab the flattened edges with the handle in place. Instead, cushion the plier jaws and grip the round edge below.

This is tricky, because you can't grab the flat edge of the cap, the part that's shaped for the pliers (**Figure A**). Make sure to cushion the jaws well when you grip the smooth, rounded body of the cap. Use rubber tape, because you can't squeeze the cap too hard. Turn the cap counterclockwise to unscrew it. The assembly you remove will contain the handle, cap, cam, packing and ball (**Figure A**).

Figure A
Ball valve faucet parts



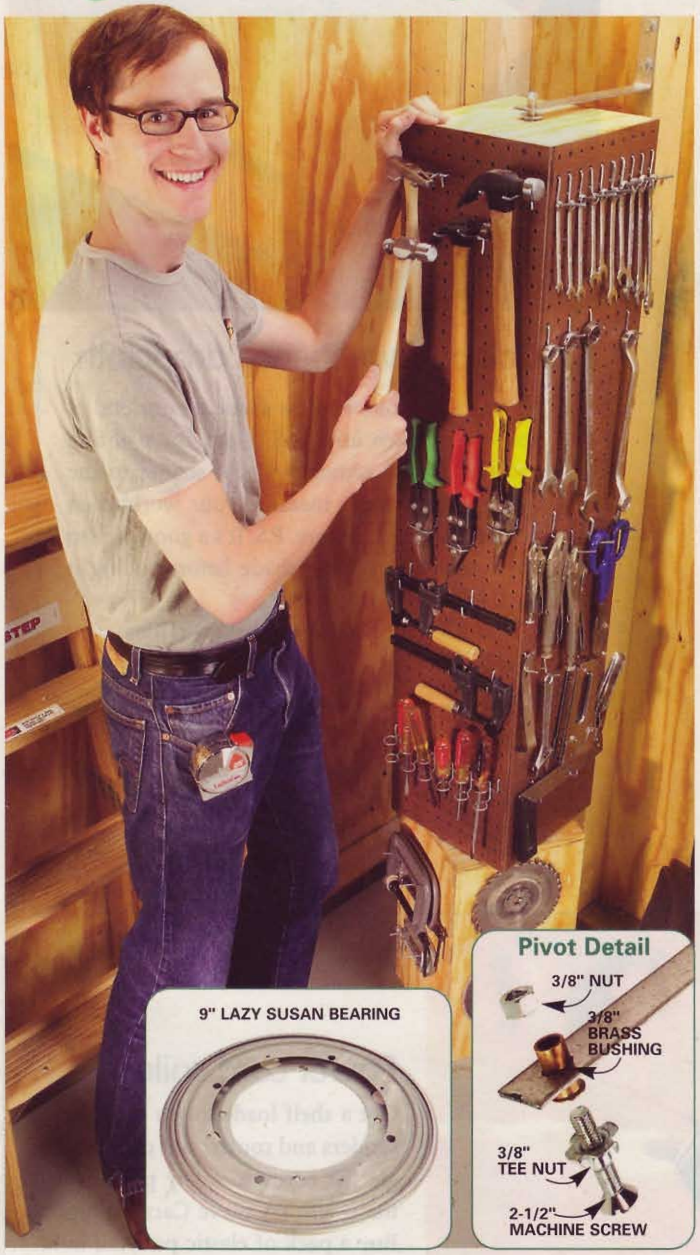
The next challenge is to break the ball from its stem. (The Allen screw clamps onto the stem.) Try grabbing it with the pliers and twisting. The goal is to separate the parts so that you can salvage and reuse the cap. You'll still have to buy a new handle and a repair kit that includes a new ball.

If this doesn't work, the only solution is to replace the entire faucet. This is a tough fix. Good luck!

Art Direction • BOB UNGAR
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by Bruce Wiebe

Pegboard tool-go-round



Materials List

ITEM	QTY.
2' x 4' x 1/4" pegboard sheets	2
1x4 x 4' pine boards	2
2' x 4' x 3/4" plywood	1
9" round lazy Susan (www.rockler.com, part No. 18531)	1
3/8" tee nut	1
3/8" x 2-1/2" machine screw	1
3/8" brass bushing	1
3/8" tee nut	1
16" length of 1" x 1/8" flat steel bar	1

Cutting List

KEY	PCS.	SIZE & DESCRIPTION
A	4	1/4" x 10" x 48" pegboard
B	3	3/4" x 10" x 10" plywood
C	2	3/4" x 3-1/2" x 46-1/2" pine boards
D	2	3/4" x 10" x 20" plywood
E	2	3/4" x 8-1/2" x 20" plywood

Build this handy rotating tool caddy ($35 for the wood at a home center and $15 for the hardware at a home center or Rockler Hardware, 800-279-4441, www. rockler.com).

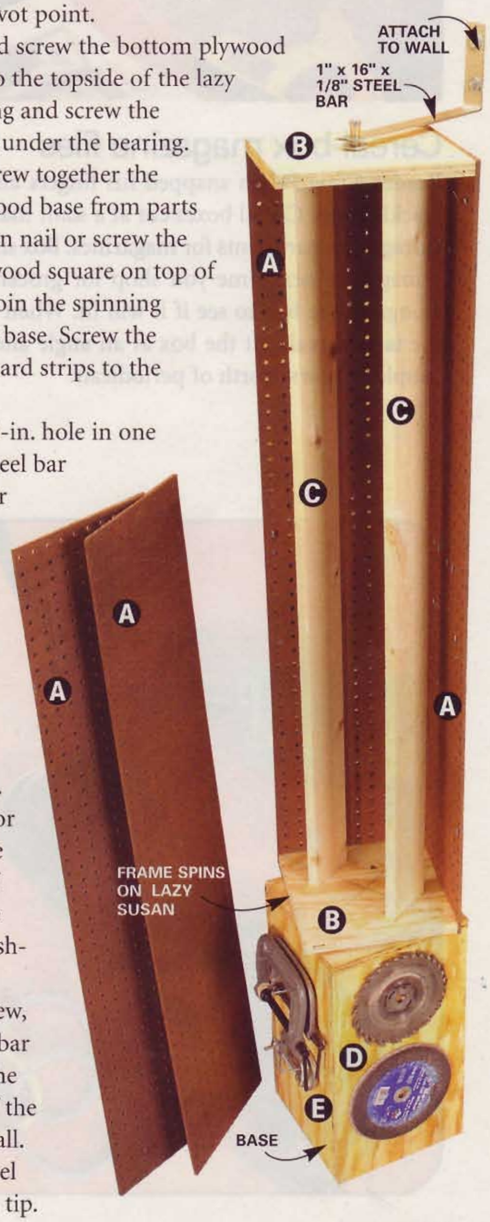
With a table or circular saw, cut the pegboard strips (A). Cut the square pieces of 3/4-in. plywood (B) and nail two of them to the 1x4 boards (C) to make a stiff frame for the pegboard. Keep the boards toward the center as shown so they don't interfere with the pegboard holes.

Center and drill a 7/16-in. hole in the upper plywood square (B) and hammer in the tee nut from the topside. Screw the machine screw through from the other side to create the pivot point.

Center and screw the bottom plywood square (B) to the topside of the lazy Susan bearing and screw the third square under the bearing.

Nail or screw together the 3/4-in. plywood base from parts D and E, then nail or screw the bottom plywood square on top of the base to join the spinning frame to the base. Screw the 10-in. pegboard strips to the frame.

Drill a 1/2-in. hole in one end of the steel bar for the upper pivot bushing, then bend the bar to create a 10-in. space between the pivot point and the wall. Drill holes for screws in the other end of the bar, slide the brass bushing onto the machine screw, slide on the bar and attach the other end of the bar to the wall. Robert Hamel inspired this tip.





Cereal-box magazine files

Reader Craig Pelcin snapped his fingers and popped us a crackling tip: Cereal boxes cut at a slant make great on-site storage compartments for magazines. Box sizes vary, so take a magazine next time you shop for groceries and hold it alongside the box to see if it will fit. When you've finished the tasty cereal, cut the box at an angle and load it with a couple of years' worth of periodicals.



Roll-out workbench dropcloth

Mount a pull-out window shade on one end of your workbench and pull it out for painting projects. Home centers will cut shades to the width you need, so measure your workbench before going to the store. P.S. It's a good idea to wipe wet paint off the shade before rolling it back up.

Thanks to Bill Waite for this great idea.



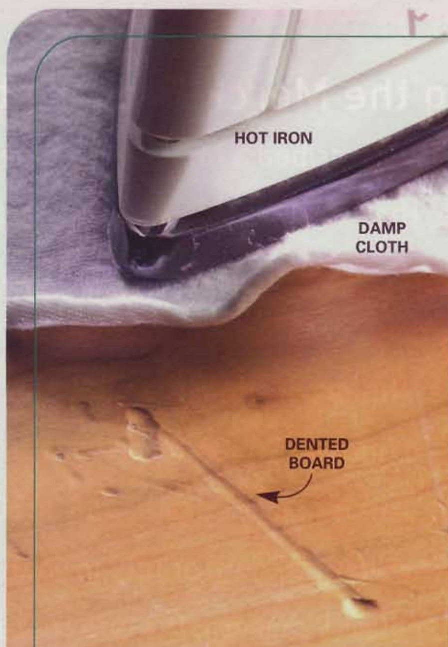
Power cord coilers

Got a shelf loaded with drills, saws, sanders and routers but can't untangle the cords to safely pull one off the shelf? Try Steve Carr's solution: Buy a pack of elastic ponytail holders ($2) and use them to keep the cords neatly coiled while the tools are stored. Snugly loop the ponytail holder around the cord so it stays on the cord while you're using the tool.



Built-in tape dispenser

Tape's easy to nab from your pegboard if you install a recessed-style toilet paper holder ($9 at a home center). Just cut a hole in a convenient spot on the pegboard, mount the holder and store your tape on the spring-loaded bar. Thanks to Bill Waite for this clever idea.



Iron out dents and scratches

Before final-sanding your next masterpiece, shine a bright flashlight across the surface to locate any dents. Lightly mark them with a pencil. Now lay a damp cloth over each bruise and press a hot iron down on the cloth. The steam causes the wood fibers to swell and fill the dent. Keep the iron pressed down until you hear steam and see it coming out of the cloth. After ironing, wait for the wood to dry before sanding. For deeper dents that don't disappear with the first ironing, push a pin into the area while it's still damp. This will allow steam to penetrate a little more during a second ironing and swell the crushed wood fibers.

Our thanks to shop teacher John Nelson for this ironclad repair technique.



Spring-clamp stop block

Here's a stop block that works great for cutting boards to the same length on a table saw or miter saw. Make an L-shaped block from scrap wood to ride along a homemade miter-gauge fence. Drill a hole in one jaw of a strong-grip clamp, then screw the L-block to the inside of the jaw. Apply a square of adhesive-backed sandpaper to the fence side of the L-block for an extra-tight grip. Our thanks to Dave Tice for this snug tip.

If you have a shop tip you'd like to share, send it to tfhtips@readersdigest.com or Workshop Tips, The Family Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121. We now pay $200 for tips we print. Original contributions become our property upon acceptance and payment. We're sorry, but tips can't be returned.

Editor • DAVID RADTKE
Art Direction • LISA PAHL KNECHT
Photography • MIKE KRIVIT

At last . . . one remote!

by Travis Larson

Remember how cool it was when you bought your first TV that had a remote control? Then you got the remote-controlled VCR. Controlling both from the comfort of your recliner was good. However, there were clouds on the horizon. DVD players, satellite and cable boxes, and home theater systems all came along with their own remotes. You had to push just the right button on just the right remote in just the right order to get anything to work. Way too complex.

One way to restore simplicity is to replace all those dedicated remotes with a single "universal" remote that controls everything. Universal remotes fall into roughly two categories on the basis of cost and features.



- If you like to watch TV in the dark, backlit buttons are a must-have feature.
- Even simpler universal remotes can be confusing. After you set up your remote, make a simple list of operation steps for yourself and other family members.
- Most remotes have a minimal battery backup to power the memory during battery changes. The backup time window can be as little as 90 seconds or as long as 15 minutes. Don't dawdle or you may have to completely reprogram the remote!



Preprogrammed universal remotes ($10 to $50)

A preprogrammed universal remote is the simplest and least expensive style. To use one, you push pretty much the same buttons in the same order as before, but all the buttons are on the same remote. That means no more digging through the sofa cushions or groping in the dark to find the correct remote, and no more switching among four remotes to make commands.

You do have to set up the remote to recognize each of your components. Each universal remote will come with a booklet that lists a three- or four-digit code for just about any component sold. You enter the right code for each component and the remote is ready to use. The steps will vary with different brands of remotes, but the procedure only takes a few minutes.

Using a preprogrammed remote means you'll still have to push lots of buttons in the right sequence. For example, if you had to use the TV remote to turn on the TV and put it on channel 3, then the DVD player remote to turn it on and push "play," you'll still have to do all those commands but all only on the universal remote. At least you'll have only one remote to keep track of.



Preprogrammed universal remote: Set up this style of remote by punching in the codes (given in an accompanying booklet) for each component. This one can handle up to five components.

Learning universal remotes ($50 to "sky's the limit")

Spend more than $50 and you're probably buying a "learning" remote. They can have many extra features, but the two main advantages they have over preprogrammed remotes is that they're programmed without codes and you can set them up for "macro" commands.

You program them by simply pointing the infrared ports of the universal remote toward the ports of the old remotes and zapping a signal across them so the new remote can "learn" the codes from each old one. Very simple, but the downside is that your existing remotes have to be in good shape. If any are broken or missing, buy a learning remote that lets you punch in codes manually as well.

The second main advantage in this price range is the ability to set "macro" commands. You can program the remote for one-button control and turn on a combination of devices all at once. After you set up a macro command for playing DVDs, for example, you'll only have to push the universal's DVD button to watch a movie. The TV, DVD and home theater system will turn on, all at the right settings. More-expensive units include additional features like built-in clocks and motion-sensitive lights to help you find them in the dark. Some can be programmed to control other remote-controlled devices like fans or air conditioners. Some even come with a USB cable that plugs directly into your computer, and programming them is just a matter of going to a Web site and following the directions (**photo right**). The most expensive ones can control many devices besides audio/visual components and have features like backlit, touch-sensitive screens.



Internet-ready programmable remote: This remote comes with a USB cord and the necessary software to go online and program it via the Internet. It sets up macro commands automatically—no muss, no fuss.

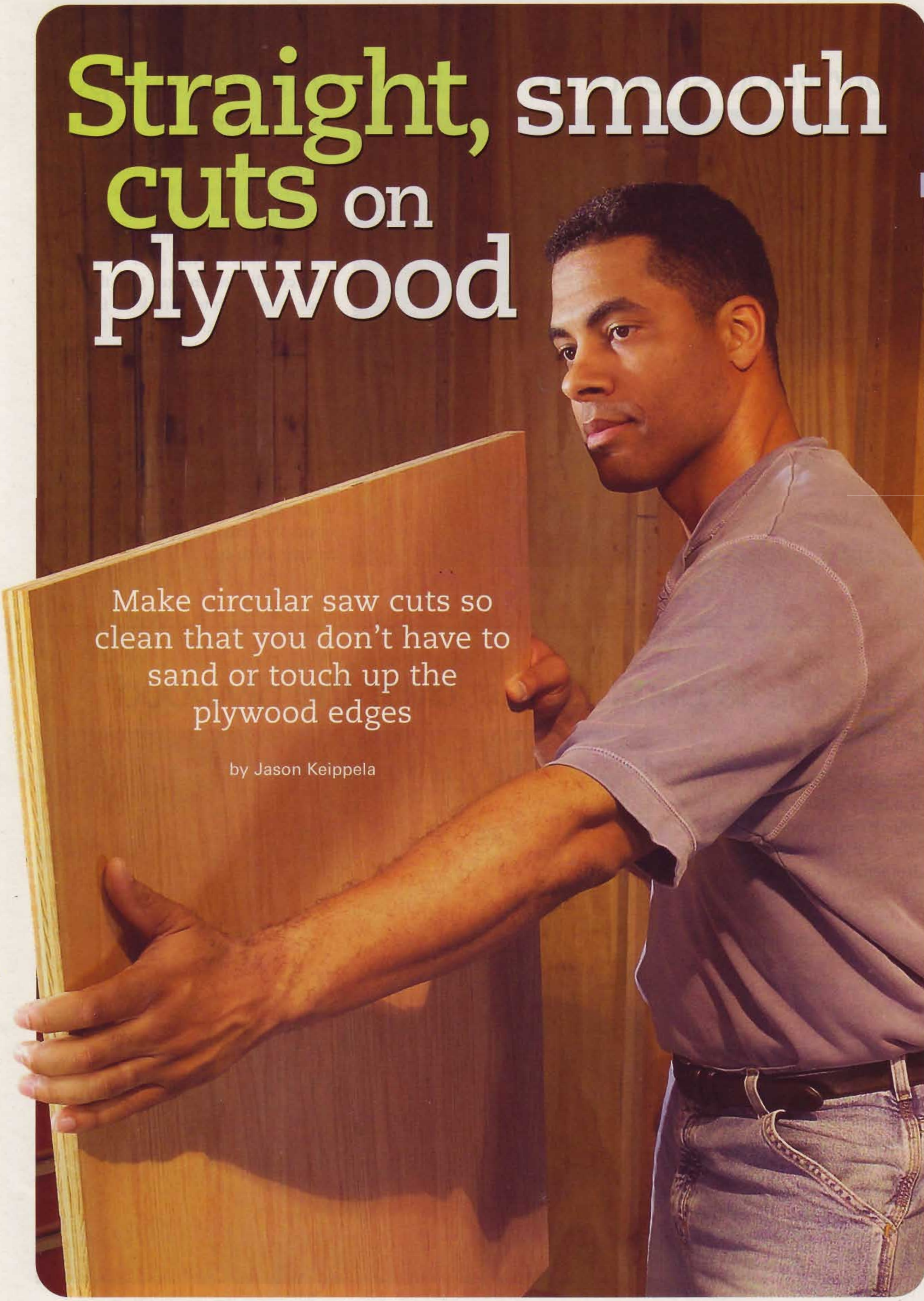
Learning universal remote: Program this remote for up to eight components by zapping the code from each component's remote.

Art Direction • DAVID SIMPSON
Photography • MIKE KRIVIT

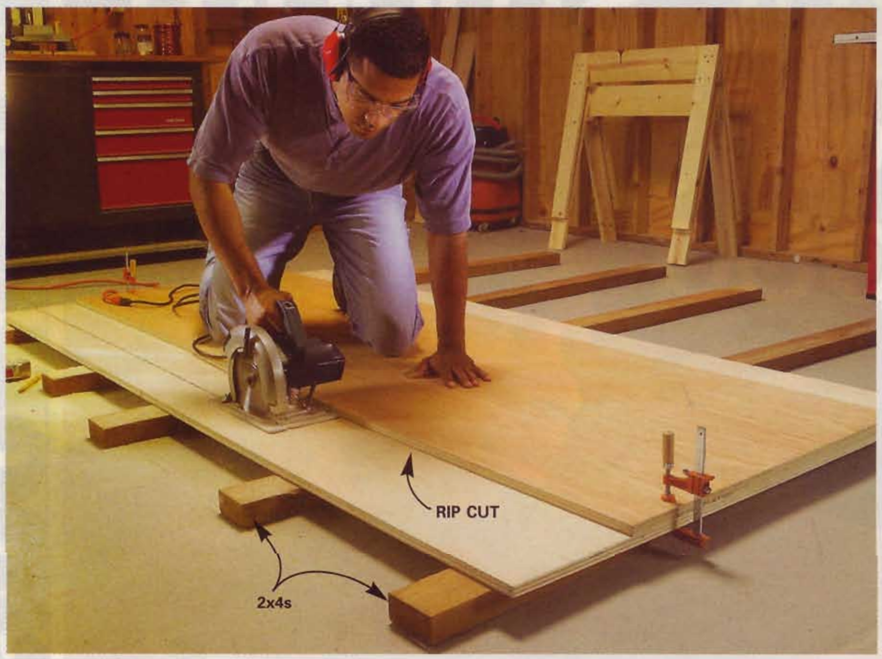
Straight, smooth cuts on plywood

Make circular saw cuts so clean that you don't have to sand or touch up the plywood edges

by Jason Keippela



Cut plywood sheets on the floor with full support



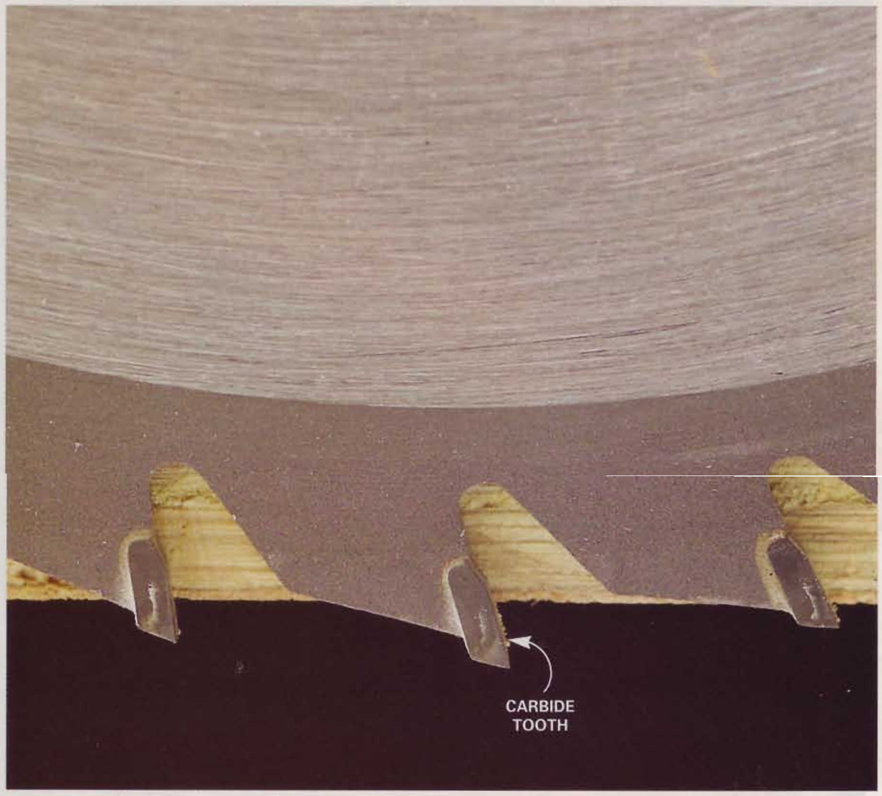
I've cut a lot of plywood on sawhorses with pretty good results, but when I want really smooth finish cuts on an expensive sheet, I always cut on the floor. That way you're sure to get solid, stable support so the plywood won't move, even if you have to climb on top of it to complete your cut. It also ensures that the cutoff piece won't splinter, break or fall off as you finish the cut.

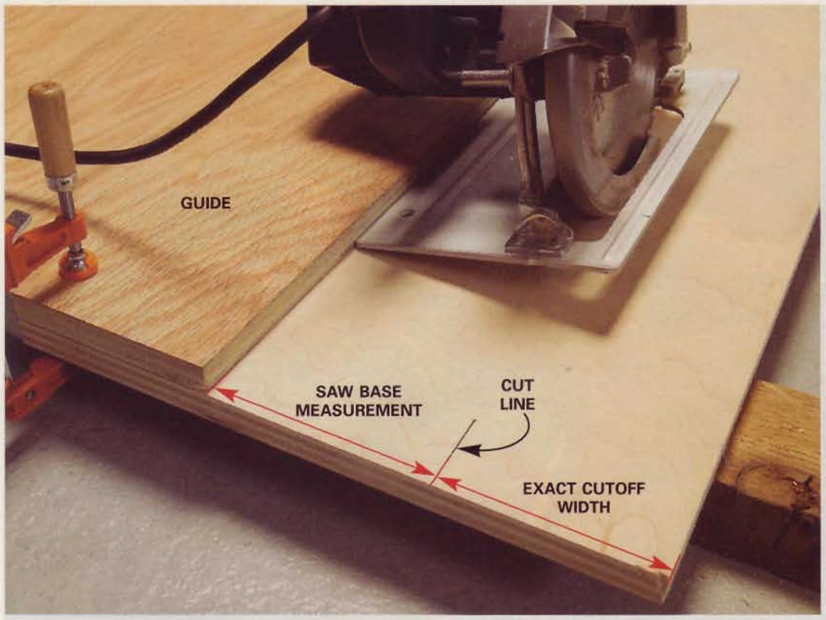
Lay 2x4s under the plywood perpendicular to the direction of the cut. The 2x4s will be "sacrificed" just a bit when the blade passes over them, but that won't affect the quality of the cut. The system works well for both rip cuts (parallel to the grain) and crosscuts (perpendicular to the grain). The more stable the plywood, the better your chances for a perfectly smooth cut.

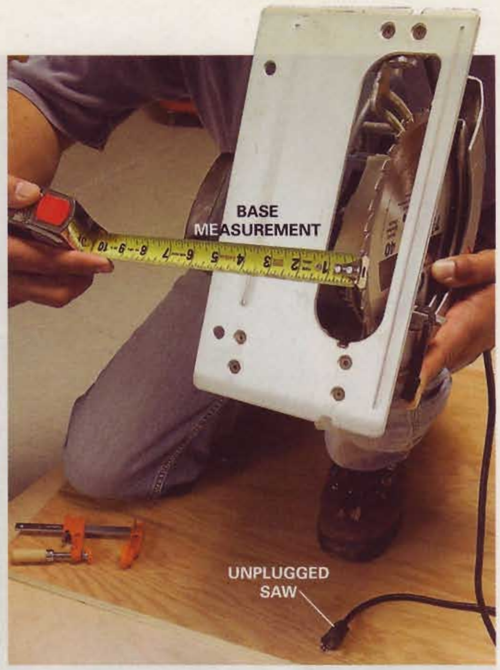
Set the blade depth to just clear the plywood thickness

Adjust the depth of your blade so that no more than half a carbide tooth falls below the bottom of the plywood (**photo right**). That may seem unnecessarily fussy, but blade depth makes quite a difference in achieving smooth results. This setting lets the teeth shear the wood fiber rather than chop it, and it helps stabilize the blade (less vibration). Both factors minimize saw tooth marks. The deeper you set your saw blade, the more marks you get.

Set the saw along the plywood edge, lift the guard and look closely as you set the depth. It's also a good time to check the blade for chipped or missing teeth. A blade with bad teeth or wood pitch buildup won't cut cleanly. Also note that a circular saw cuts on the upstroke, which often splinters the top edge (veneer) slightly. The bottom edge usually remains splinter-free. So always cut plywood with the good side down.





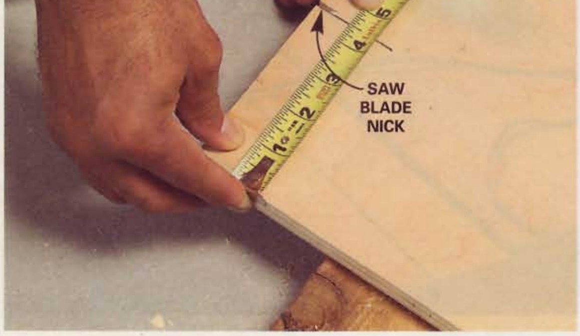


Clamp on a solid straightedge for a guide

You can buy straightedges at home centers and hardware stores, but for long cuts I almost always use the "factory cut" edge on a strip of 3/4-in. plywood. For one thing, the factory edge is usually perfectly straight (sight along the edge to make sure). In addition, the 3/4-in. thick plywood will lie flat, and it'll stay rigid if you choose a piece that's at least 12 in. wide. You only have to clamp the ends.

The tricky part is clamping it in the right spot for an exact cut. To do this, measure the distance from the edge of your saw base to the blade (**right photo above**). Add this measurement to the width of your cut, mark the plywood at each end and clamp the straightedge at that spot. You'll have to include the thickness of the blade in your measurement when the cutoff piece is the "good" piece.

Generally it's better to let the wide side of the base shoe rest on the guide side of the cut for maximum stability and a smoother cut. That also allows the smaller cutoff piece to move aside slightly as you finish the cut, so you can finish the cut cleanly, without binding.



Test the guide for accuracy before making the cut

Here's where you fine-tune the cut. Draw a fine pencil line about 2 in. long marking the desired width of your piece. (We made a dark line for photo clarity.) Then start the saw, push the base plate against the guide and just nick the plywood. Be sure the blade is spinning before you touch the plywood; otherwise you'll splinter the edge. Then measure to the edge of the nick to double-check your measurements. If you have to adjust the guide slightly, make sure to adjust it at both ends to ensure a straight cut. Be fussy here. Retest until the guide is positioned just right.



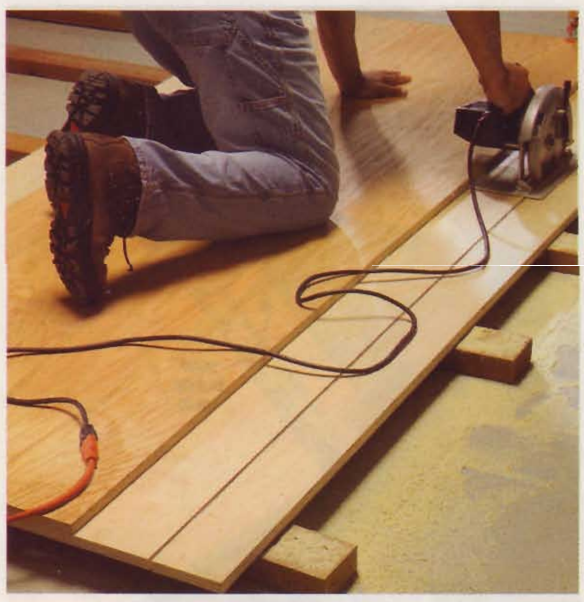
Make the cut at a steady speed without stopping

Cutting speed depends on many factors, including the type and sharpness of the blade and the type of plywood you're cutting. In general, a sharp blade should flow through the wood with little force, as if it's melting the wood away. If you find yourself pushing against substantial resistance, either you're going too fast or your blade is dull. Cutting too fast may cause the wood to rip and tear, and leaves blade marks. Going too slowly may cause the blade to overheat and burn the wood.

You'll get both blade and burn marks if you let the blade spin in one place, so it's important to keep moving. This is where working on the floor pays off for long cuts. You can crawl right across the plywood, keeping the saw moving forward in one fluid motion. And you don't have to bend or stretch into an awkward position.

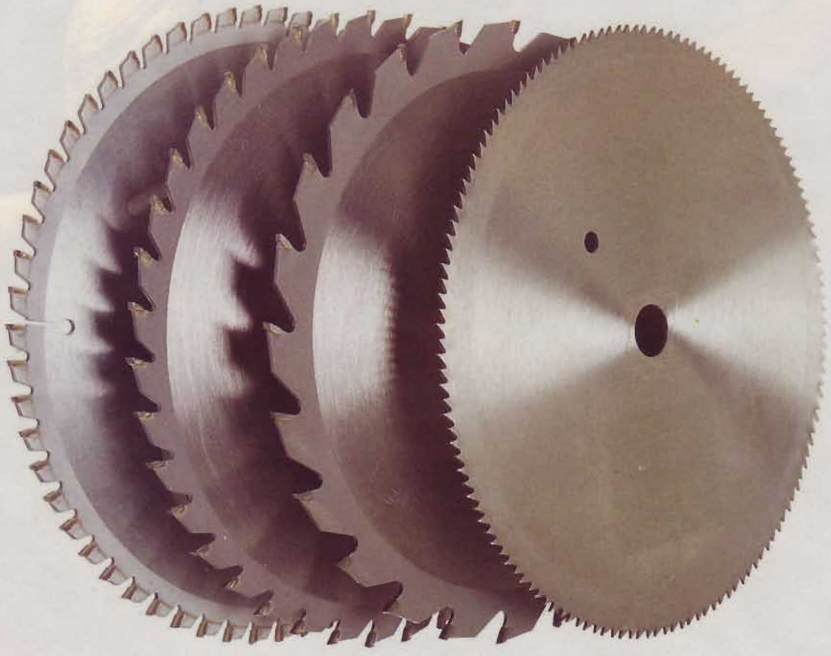
But the cord can do you in. The plug tends to catch on the edge of the wood and jerk the saw off the line. Sometimes the saw even comes unplugged. (I've had that happen more than once!) Be sure to set enough slack on top of the plywood so you don't get hung up (**photo right**).

Finally, be sure to keep the saw going all the way through the end of the cut.

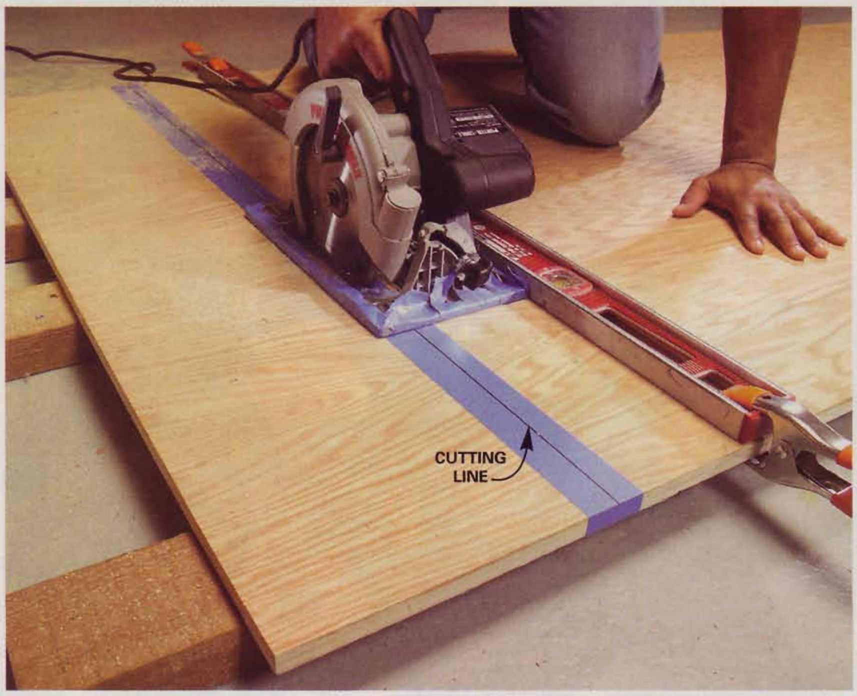


Choose a blade with more teeth for smoother cuts

As long as they're sharp, any of these four 7-1/4-in. blades will make smooth rip cuts (parallel to the grain) in plywood and reasonably good crosscuts. In general, the more teeth, the smoother the cut. The disadvantage of the 140-tooth plywood blade is that the teeth will dull much faster than the teeth on the three carbide blades. This is especially true if you cut particleboard. My favorite is the 40-tooth carbide blade. I keep one in reserve and use it only when I need a fine cut. However, if you have a project that calls for a lot of fine cuts in expensive plywood, don't hesitate to buy the special 56-tooth laminate-cutting blade. If you can't find one at a hardware store or home center, you can get one (Freud model No. LU98 for $74) from Woodworker's Supply (800-645-9292).

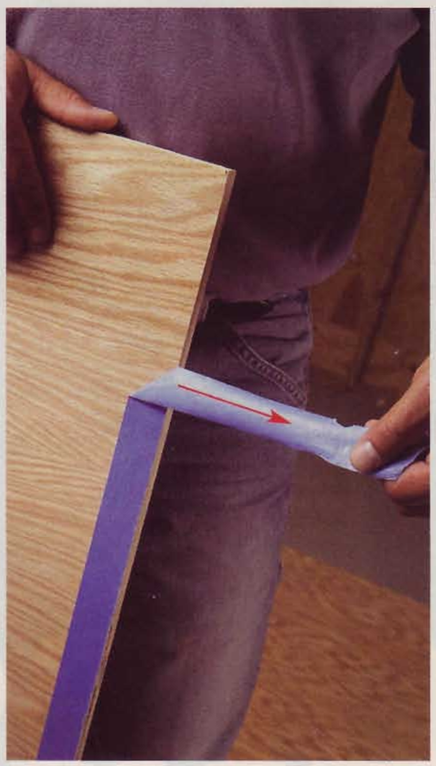


56-tooth laminate blade, $74 | 40-tooth carbide blade, $15 | 24-tooth carbide blade, $10 | 140-tooth plywood blade, $5



Tape crosscuts to reduce splintering

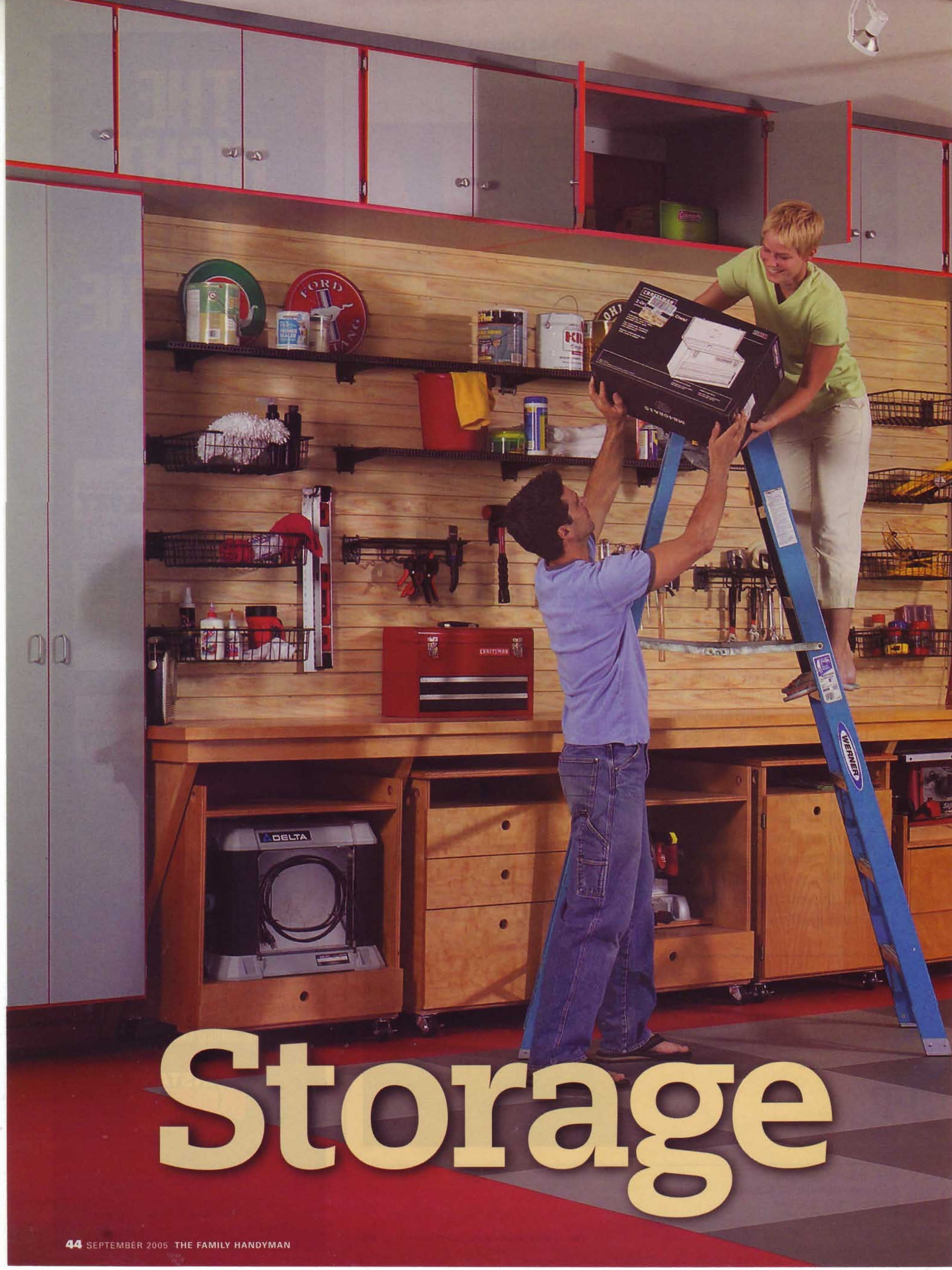
Crosscuts, that is, cuts perpendicular to the grain, will splinter the top veneer, even with a sharp blade. This is a bigger issue when both sides of the plywood will be visible. The best solution is to buy an expensive laminate blade (**photo,** p. 42). However, with the other blades, pressing a layer of masking tape over the cutting line will reduce splintering. Remove the tape carefully, pulling it off perpendicular to the cut (**photo right**) to avoid peeling off the veneer.



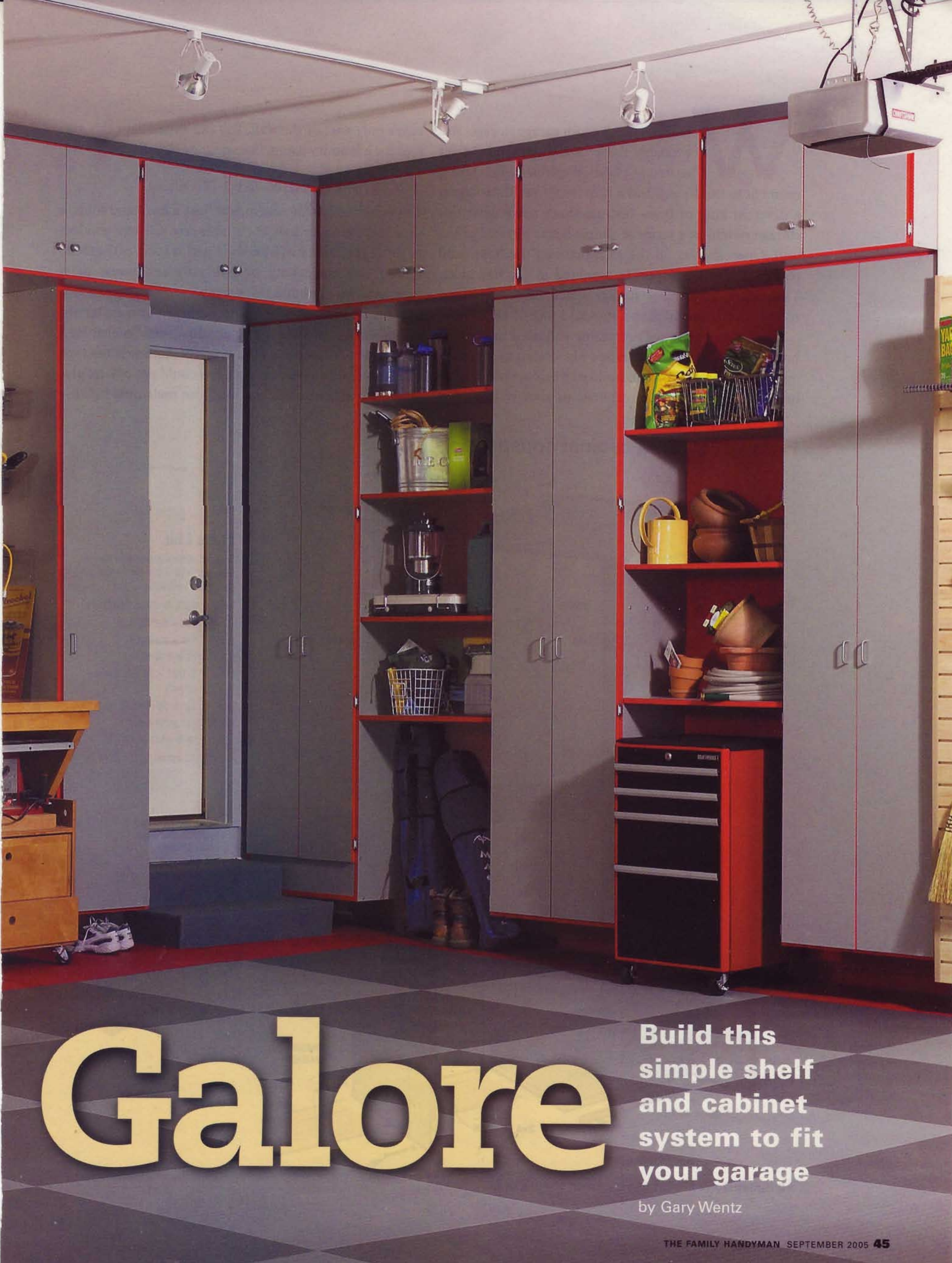
If you have to cut with the good (finished) side up, reduce potential scratches by taping the bottom of the saw base (photo above).

tip

Editor • DUANE JOHNSON
Art Direction • EVANGELINE EKBERG
Photography • BILL ZUEHLKE



Storage



Galore

Build this simple shelf and cabinet system to fit your garage

by Gary Wentz

When you think about garage storage, you probably think of flimsy metal shelves or crude plywood cabinets. But take a moment to think outside the box. Better yet, think about a different kind of box—because that's really what this storage system is: a series of simple boxes screwed to the wall. Open shelves fill the gaps between the boxes and rest on adjustable supports mounted in the box sides. This design maximizes storage space, saves labor and requires less material than a standard wall of cabinets.

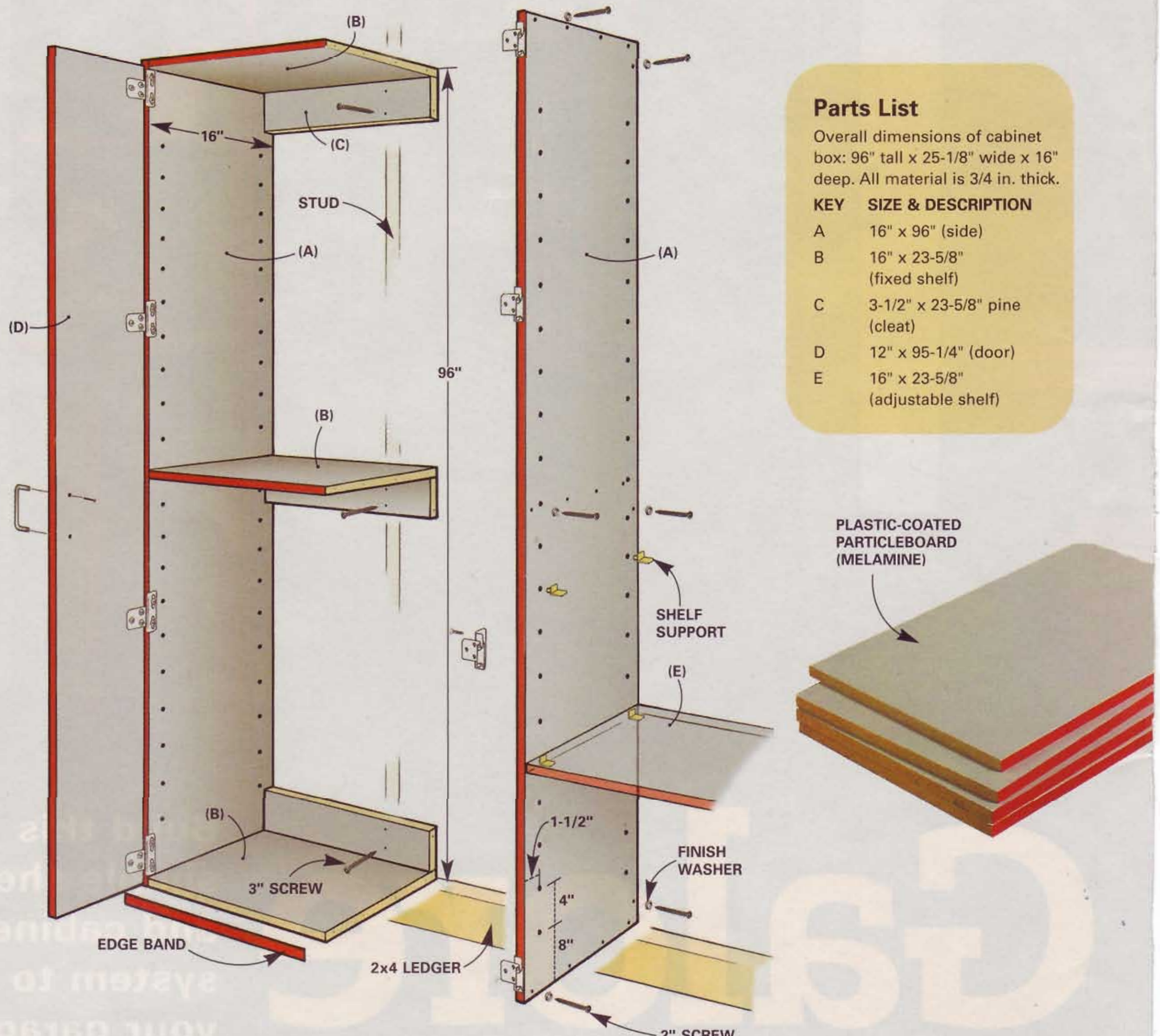
This article will cover everything you need to know to build this system. You can adapt our design to suit your own special needs. You can build one cabinet or a dozen, build tall floor-to-ceiling cabinets or shorter ones that cover only part of the wall. You can even adapt this system for a laundry room, basement or closet.

Tools, materials and money

You could build this system with just a few hand tools, a drill and a circular saw, but a table saw will save you lots of time. The skills you'll need are just as basic as the tools. If you can make long straight cuts and screw parts together, you can build this system.

This whole system is made from just two materials: plastic-coated particleboard, usually called "melamine," and construction-grade pine 1x4s. (Melamine is the type of plastic used as the coating.) You could use 3/4-in. plywood or particleboard, but we chose melamine because

Figure A Upright cabinet construction

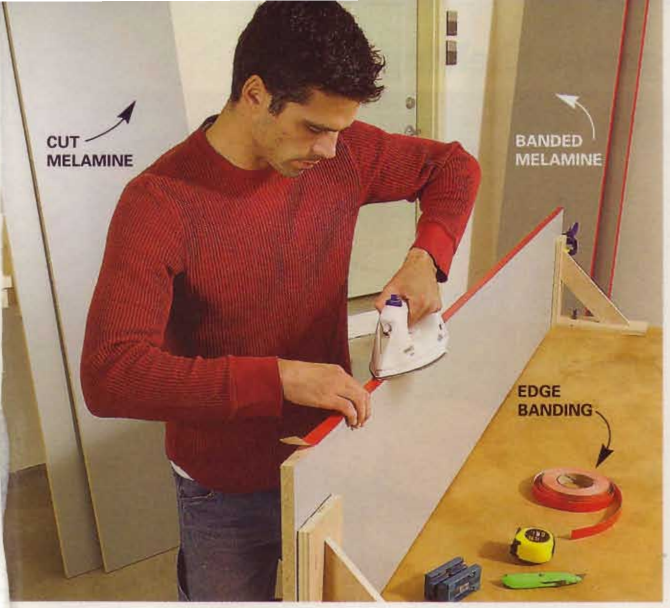


Parts List

Overall dimensions of cabinet box: 96" tall x 25-1/8" wide x 16" deep. All material is 3/4 in. thick.

KEY	SIZE & DESCRIPTION
A	16" x 96" (side)
B	16" x 23-5/8" (fixed shelf)
C	3-1/2" x 23-5/8" pine (cleat)
D	12" x 95-1/4" (door)
E	16" x 23-5/8" (adjustable shelf)

All dimensions are for the cabinets shown here.



1 **Cut melamine to width and iron on edge banding. Position the banding so it overhangs the ends and sides. Let the banding cool before trimming.**



2 **Hold a wood block firmly over the end and carefully slice off the excess banding. Use a sharp new blade in your utility knife.**

it doesn't require a finish. The melamine coating is tougher than most finishes and easy to clean.

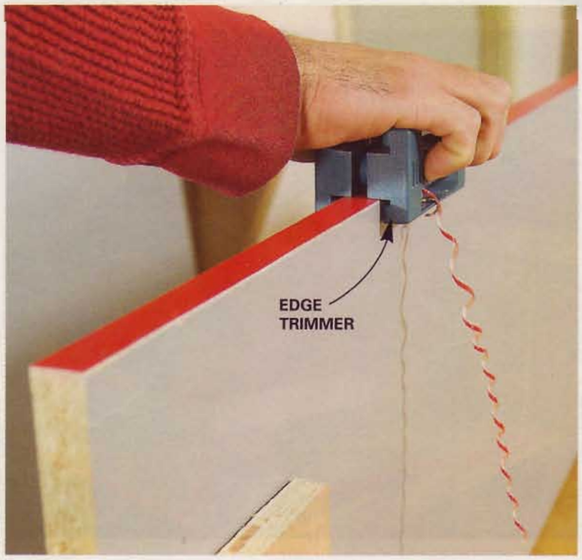
The materials for our floor-to-ceiling system cost about $37 per linear foot of wall space. That's less than we would have paid for wimpy "utility" cabinets at a home center. Our garage walls were 10 ft. tall. If your ceiling is about 8 ft. tall, you can eliminate the deep upper cabinets. That will lower the cost to about $27 per linear foot. If you opt for completely open shelving and eliminate the cabinet doors, your cost will drop to about $20 per linear foot.

Plan the system to suit your stuff

This system is easy to adapt to the space available in your garage. Start the planning process with a tape measure and notepad. Survey your garage, basement, attic and any other place that currently holds stuff you'd like to store in the cabinets. Jot down the measurements of larger items (like luggage or boxes that hold holiday decorations).

Then go to the wall where you'll install the cabinets. Roughly block out the cabinet locations on the wall. Remember to space out the cabinets to leave room for shelves in between. Experiment with different cabinet widths and spacing until you find a layout that works well. Follow these guidelines:

- Each cabinet must have at least one stud behind it so you can fasten the cabinet securely to the wall.
- Limit door widths to 24 in. To cover an opening wider than that, install double doors. We limited most of our doors to 12-in. widths so that we could open them even when the car was parked in the garage.
- Shelves longer than 2 ft. often sag. If you make them longer, stiffen the melamine by screwing 1x4 cleats to the undersides.





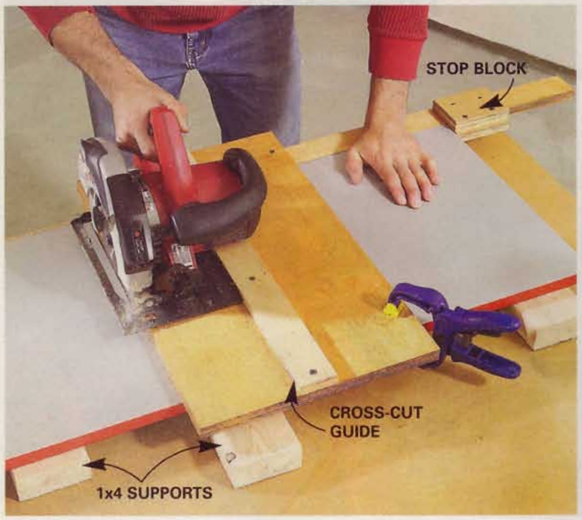
3 **Slice off the excess banding with an edge trimmer. Test the trimmer on a banded scrap first; you may have to adjust the blades for a perfect cut.**

- If possible, size and space the cabinets so the shelves inside and between cabinets are the same length. That way, all your shelves will be interchangeable and faster to cut out.
- Size your cabinets to make the most of a full sheet of melamine. By making our cabinets 16 in. deep, for example, we were able to cut three cabinet sides from each sheet with no wasted material (see **Figure A** for other dimensions). Don't forget that your saw blade

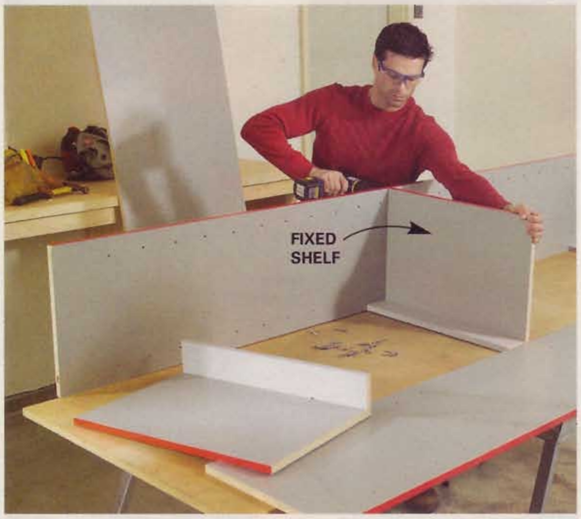


4 **Drill 1/4-in. shelf support holes through cabinet sides using a scrap of pegboard as a guide. For end panels that won't support shelves on one side, place a stop collar on the drill bit.**





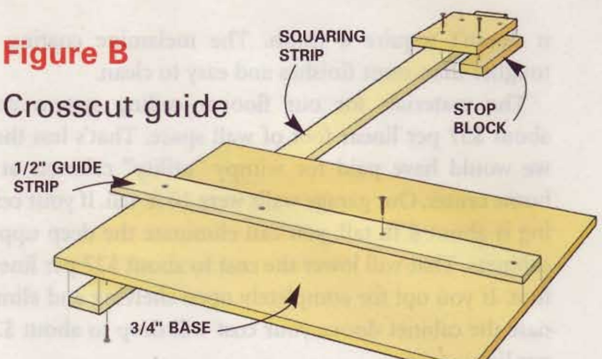
5 **Cut parts to length using a crosscut guide. A stop block screwed to the guide lets you mass-produce identical lengths fast. Support the melamine on both sides of the cut with 2x4 scraps.**



6 **Predrill and screw 1x4s to melamine to form the fixed shelves. Screw all the fixed shelves to one cabinet side, then add the other side to complete the cabinet.**

Figure B

Crosscut guide



This guide takes a few minutes to make but saves time when you're cutting the fixed shelves (Photo 5) and even more time later when you're cutting shelves (Photo 14). Our system required 30 shelves. To make a crosscut guide, screw a guide strip to the base and run your saw against the guide strip to trim the excess off the base. Add a squaring strip positioned perpendicular to the guide strip. Position the stop block to set the length of your parts.

eats up about 1/8 in. of material with each cut. Most sheets of melamine are oversized by about 1 in. to account for this.

Buying melamine

Most home centers carry melamine in 4 x 8-ft. sheets ($30), usually only in white. For colors other than white, try a lumberyard that serves cabinetmakers (look in the Yellow Pages under "Cabinets, Equipment and Supplies" or "Hardwoods"). These suppliers often charge more (about $40 per sheet) and might sell only to professionals, so call before you visit. Some cabinet suppliers stock a few colors like gray, black and almond. Others carry a dozen or more colors. Manufacturers produce hundreds of colors, but unusual colors are only available in large quantities (30 or even 60 sheets).

Plastic iron-on edge banding is available at home centers, usually only in white. Cabinet suppliers carry other colors, but be sure to get banding that can be ironed on.

Working with melamine

With your cabinet dimensions in hand, begin cutting the melamine into parts. Cut the material into equal widths for the sides and the fixed and adjustable shelves, but don't cut the stretchers and shelves to length until they're edge banded. Here are some pointers:

Get help. Melamine is too heavy to handle solo. If you have a large, stable table saw, you and a helper can cut full sheets. But it's usually better to slice a sheet into manageable sections with a circular saw first. Then make finish cuts on the table saw. For more help cutting sheet material, see "Sharpen Your Skills," p. 35.

Wear gloves when handling large pieces. The edges of melamine are sharp enough to slice your hands.

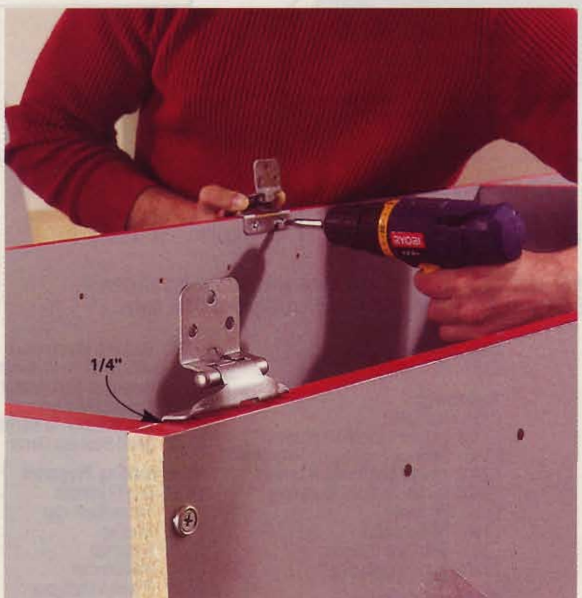
Avoid scratching the melamine surface. If your workbench has a rough surface, cover it with cardboard or old carpet. Pad sawhorses the same way. Run a few strips of masking tape across the base of your circular saw so it doesn't mar the melamine.

Be careful with edges. They're easy to chip. When you stand parts on edge, set them down gently. Don't drop or drag sheets across the floor.

Plan for chip-out. Saw blades often leave slightly chipped edges in the melamine coating. A new carbide blade will chip less than a dull one, but you can't completely prevent chips. Chipping is worse on the side where the saw teeth exit the material. When you run melamine across a table saw, the underside of the sheet is particularly prone to chipping. When you're using a circular or jigsaw, chipping is worse on the face-up side. Plan your cuts so that all the chipped edges are on the same side of the part. Then you can hide them during assembly by facing them toward the insides of cabinets.

Iron on the edge band

The first rule of edge banding is to protect your marriage and buy a cheap iron (less than $10). Set the iron to the





7 **Screw hinges to cabinets. Position top and bottom hinges 1/4 in. from each corner and space the others equally apart.**

editor's note:

Making screws work in melamine

Screws are the only fastening method used in this entire project. They make fast, strong joints. But screwing into melamine presents a few complications:

Strip-out: Like any particleboard product, melamine strips easily if you overdrive screws. Go easy on the drill trigger as you drive screws home. Use coarse-thread screws only. Fine-thread screws will strip every time. Longer screws also minimize stripping. If this project had been built from plywood, 1-5/8-in. screws would have worked fine. But we used 2-in. screws to assemble the boxes.



Splits: Particleboard splits easily. Never drive a screw into particleboard without drilling a pilot hole. We drilled 7/64-in. holes and used No. 8 screws. Even with a pilot hole, screws will split particleboard if you place them close to ends. Keep them at least an inch from the ends of parts.

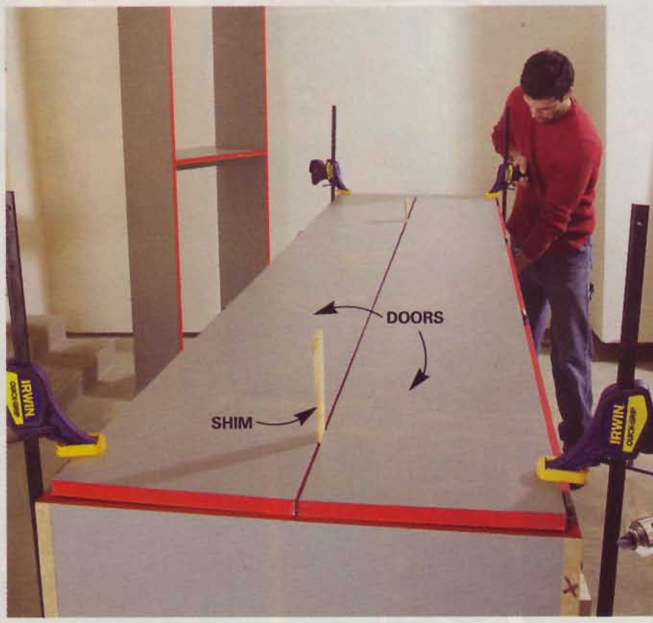


Countersinking: Tapered screw heads will sometimes sink into melamine, but often they'll strip out before the head is flush with the melamine surface. Next to an edge, they'll crush out the particleboard. Always drill countersink holes for screw heads. You can drill countersink and pilot holes in one stroke with a countersink bit ($4).



Appearance: *Even with a clean* countersink hole, screw heads are a blemish in melamine's perfect surface. For a neater look, use finish washers (photo above) with any screws that will be visible. Finish washers also eliminate the need for pilot holes.





8 **Position the doors over the hinges using shims to maintain a 1/8-in. gap. Use clamps or weights to hold the doors in place. A self-centering drill bit (below) makes positioning screw holes easy.**



SELF-CENTERING BIT ($7)

"cotton" setting and iron the banding on in two or three passes (**Photo 1**). On the first pass, run the iron quickly over the banding just to tack it into place. Center the banding so it overhangs on both sides. Make a second, slower pass to fully melt the glue and firmly adhere the banding. Then check the edges for loose spots and make another pass if needed.

Trim the ends of the banding with a utility knife (**Photo 2**) before you trim the edges. It's possible to trim the edges with a utility knife if you set the banded edge face down on a flat surface. But you'll get faster, better results with a trimmer ($13) that slices off both sides with one pass (**Photo 3**). If you damage the banding while trimming, just reheat it, pull it off and start over.

Drill shelf support holes

The adjustable shelves rest on shelf supports that fit into holes drilled into the cabinet sides (**Photo 4**). Drill all the way through the sides that will support shelves inside and outside the cabinet. Drill holes 3/8 in. deep in cabinet sides that form the outer ends of your shelf system. Tape wrapped around a drill bit makes a good depth marker when you're drilling just a few holes, but a stop collar ($4) is better for this job.

Check your shelf supports before drilling. Some require 1/4-in. holes; others require 5mm holes. Use a brad



9 **Predrill with a self-centering bit and drive one screw through each hinge from inside the cabinet. Add the other screws with the doors open.**



10 **Fasten a 2x4 ledger to the wall framing with 3-in. screws. Choose a straight 2x4 and make sure the ledger is level.**

point drill bit for a clean, chip-free hole. To limit blowout where the bit exits the melamine, set a "backer" underneath. You can make a drilling guide from just about any material, but a strip of pegboard is a perfect ready-made guide (a 4 x 8-ft. sheet costs $8). Label the bottom of your guide and the bottoms of the cabinet sides so all the holes will align. Otherwise you'll end up with teeter-totter shelves.

Build fixed shelves and assemble the cabinets

The fixed shelves that fit between cabinet sides (A) are made from melamine panels (B) and pine 1x4s (C). We painted our 1x4s to match the melamine. Cabinets less than 4 ft. tall need only top and bottom fixed shelves. Taller cabinets also need a middle fixed shelf. To make the fixed shelves, just cut melamine and 1x4s to identical lengths and screw them together (**Figure A**).

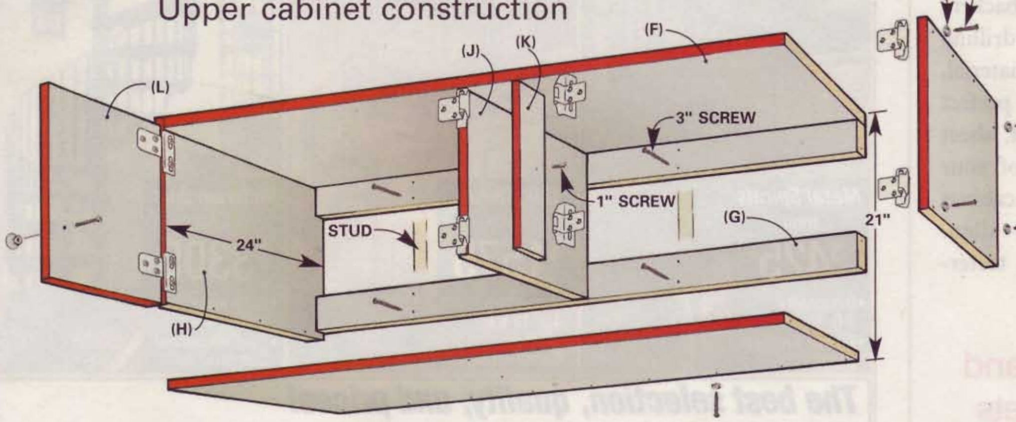
Assembling the cabinets is a simple matter of fastening the sides to the fixed shelves (**Photo 6**). Predrill and drive a screw near the front of each fixed shelf first, making sure the banded edges of the fixed shelf and side are flush. Then drill and drive another screw near the backside of the cabinet to hold the fixed shelf in position before you add the other screws. Handle the completed cabinet boxes with care—they're not very strong until they're fastened to the wall.

Hang the doors

Make the doors *after* the cabinet boxes are assembled. To hang the doors, first screw hinges to the cabinets (**Photo 7**). The type of hinge we chose is called a "wrap" hinge because it wraps around the corner at the front edge of the cabinet. This design has two big advantages: It mounts more securely to the cabinet and it lets you position the doors perfectly (**Photo 8**) before you fasten them (**Photo 9**). Be sure to buy 1/4-in. "overlay" hinges (the door covers 1/4 in. of the cabinet edge).

Figure C

Upper cabinet construction



Parts List

Overall dimensions of cabinet box: 21" tall x 72" wide x 24" deep. Your dimensions may differ. All material is 3/4 in. thick.

KEY	SIZE & DESCRIPTION
F	24" x 70-1/2" (top/bottom panel)
G	3-1/2" x 70-1/2" pine (cleat)
H	21" x 24" (side panel)
J	19-1/2" x 23-1/4" (divider)
K	4" x 23-1/4" (hinge spacer)
L	17-7/16" x 20-1/4" (door)

Hinges with a larger overlay will protrude beyond the outer edge of the cabinet.

We used four hinges for each of our 12-in.-wide double doors. If you opt for a single wide door, use at least five hinges. The hinges themselves are strong enough to hold much more weight, but they're fastened with just two screws each. The particleboard core of melamine doesn't hold screws very well. So when in doubt, add more hinges.

With the hinges in place, measure between them to determine the door width (with double doors, allow a 1/8-in. gap between them). To determine the length, measure the cabinet opening and add 3/4 in. Cut the doors and set them in place to check the fit before banding the edges. When the doors are complete and screwed to the hinges, label each door and cabinet. Then unscrew the doors to make cabinet installation easier.

Mount the cabinets

Don't install the cabinets directly on the garage floor. Water puddles from dripping cars will quickly destroy particleboard. We mounted our cabinets about 6 in. off the floor—just enough space to allow for easy floor sweeping. This height also let us level the ledger and fasten it to the wall framing (**Photo 10**) rather than to the concrete foundation. We drove screws into the studs and sill plate.

You'll need a helper to install the cabinets (**Photo 11**). Install the two end cabinets first, then position the others between them, leaving equal spaces for the shelves that fit between the cabinets. Watch out for obstructions that prevent cabinet doors from opening. End cabinets that fit into corners, for example, should stand about 1/2 in. from the adjacent wall. We mounted one of our end cab-



11 **Set the cabinet into place and screw it to the ledger. Then level the cabinet and fasten it to the wall with pairs of 3-in. screws driven through the upper and middle cleats into studs.**



12 **Build the upper cabinets with the same techniques and materials used for the uprights. Install a blank panel where cabinets will meet at a corner.**



13 **Set the upper cabinets on top of the lower cabinets and screw the uppers together with 1-1/4-in. screws. Then screw them to the wall studs and to the lower cabinets.**

inets about 1-1/2 in. from the wall to allow for the trim around the entry door (see **Photo 11**).

Upper cabinets

The upper cabinets provide deep, enclosed storage space and tie the upright cabinets together so they can't twist away from the wall. Instead of installing upper cabinets, you could simply run a long shelf across the tops of the upright cabinets.

The upper cabinets are simply horizontal versions of the upright cabinets; you use the same techniques and materials (see **Figure C**). Here are some building tips:

- Minimize measuring and math errors: Build the upper cabinets *after* the upright cabinets are in place.
- To allow easy installation, leave a 1/2-in. gap between the ceiling and the upper cabinets. You could leave the resulting gap open, but we chose to cover it. Here's how: We ripped 1x4s into 1-in.-wide strips, painted the strips to match the edge band and screwed the strips to the tops of the cabinets. After the uppers were installed, we cut trim strips from 1x4, painted them and used them to cover the gap.
- You can build upper cabinet sections up to 8 ft. long. For strength and ease of installation, size the sections so they meet over the upright cabinets, not over open shelves.
- Remember to add hinge spacers (K) to dividers (J) so you can install hinges back to back.

Shelves and hardware come last

Cut the shelves at the very end of the project (**Photo 14**). That way, you can take exact measurements inside and



14 **Measure the spaces inside and between cabinets. Subtract 1/4 in. and cut shelves using the crosscut jig.**



between shelves and use up any scraps. The number of shelves is up to you; we made four for inside each cabinet and six for each between-cabinet space. We didn't put any shelves in the upper cabinets. Install cabinet knobs or pulls after the doors are in place to make drilling a hole in the wrong location just about impossible.

Art Direction • MARCIA WRIGHT ROEPKE
Photography • BILL ZUEHLKE
Illustrations • SUSAN JESSEN

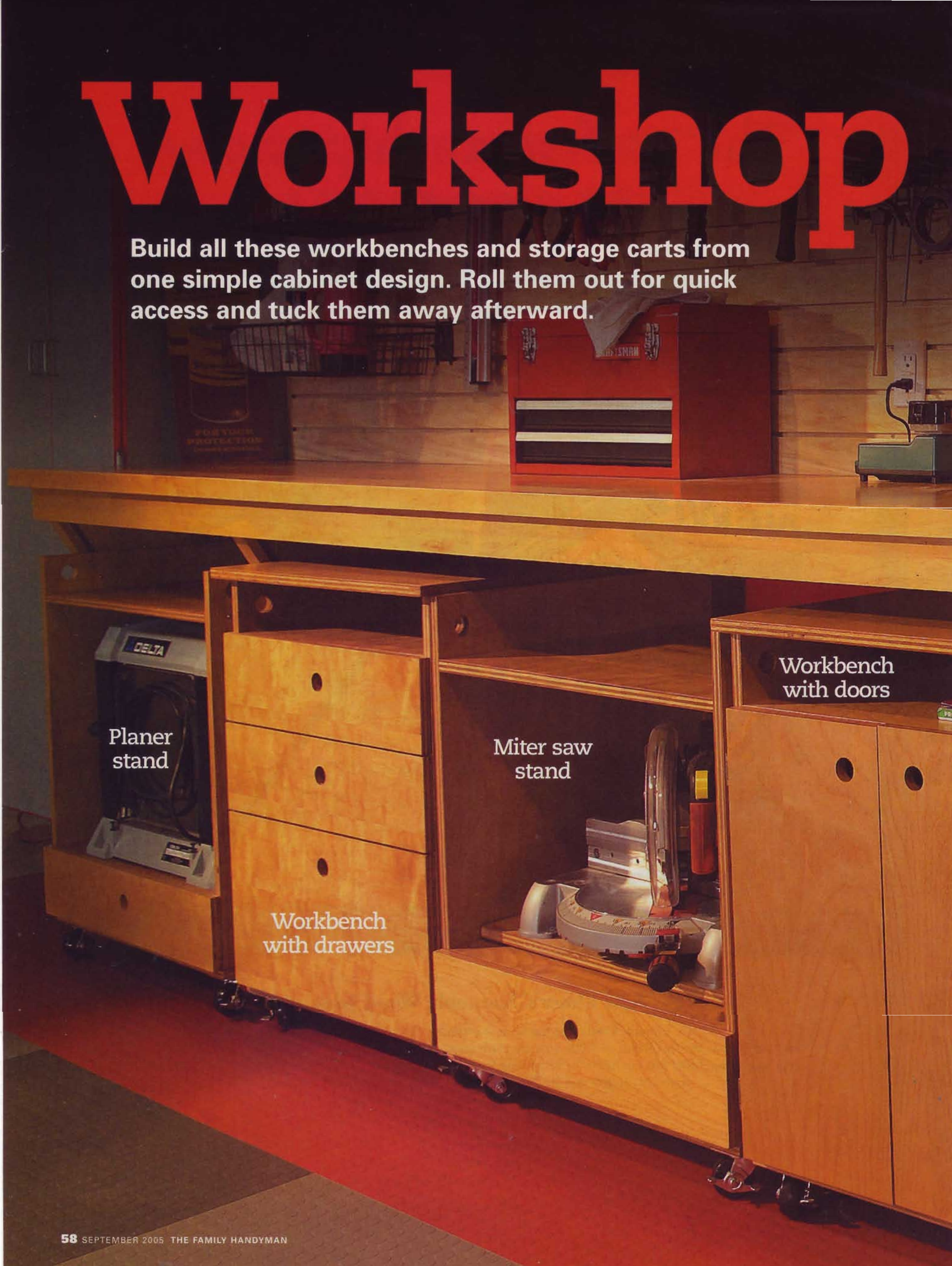
Buyer's Guide

All the tools and materials used in this project are available at most home centers. Most of the materials can also be ordered from www.woodworkershardware.com (800-383-0130).

- Finish washers, No. SCWCF08, $5 for 100
- Shelf supports, No. G111NI, $11 for 100
- 1/4-in. overlay hinges (burnished brass), No. A07566BB, $1.63 per pair
- Edge band (white, black, gray and almond), $33 for 250 ft.
- Double-sided edge band trimmer, No. VIAU93, $13

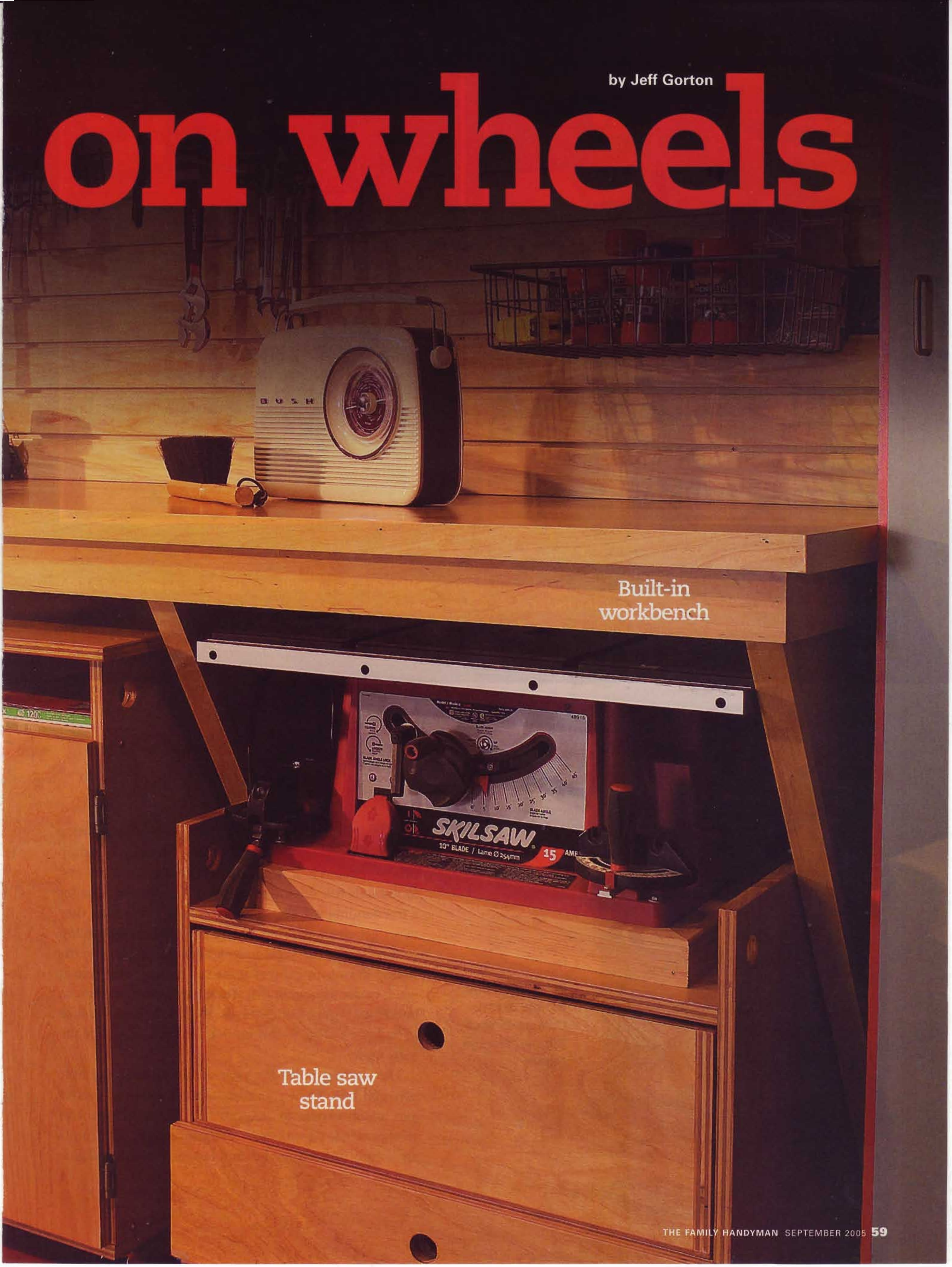
Workshop

Build all these workbenches and storage carts from one simple cabinet design. Roll them out for quick access and tuck them away afterward.



on wheels

by Jeff Gorton





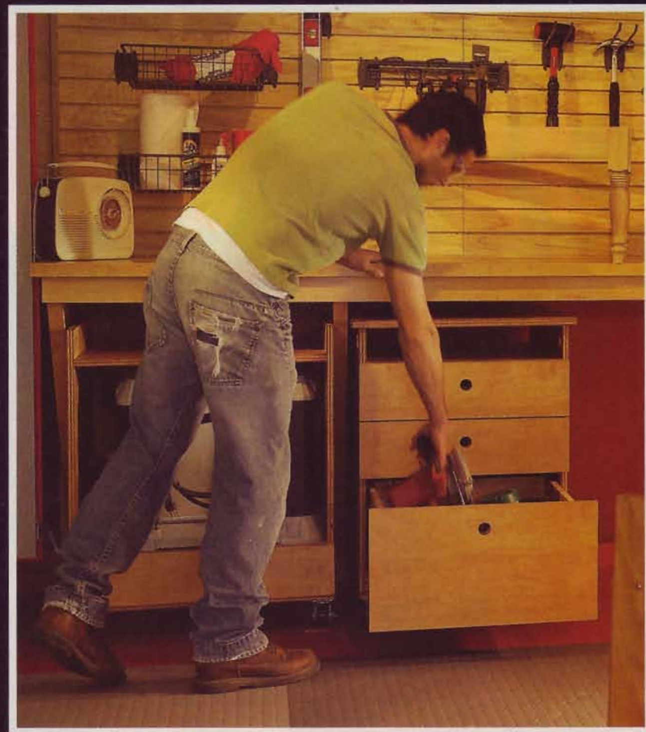


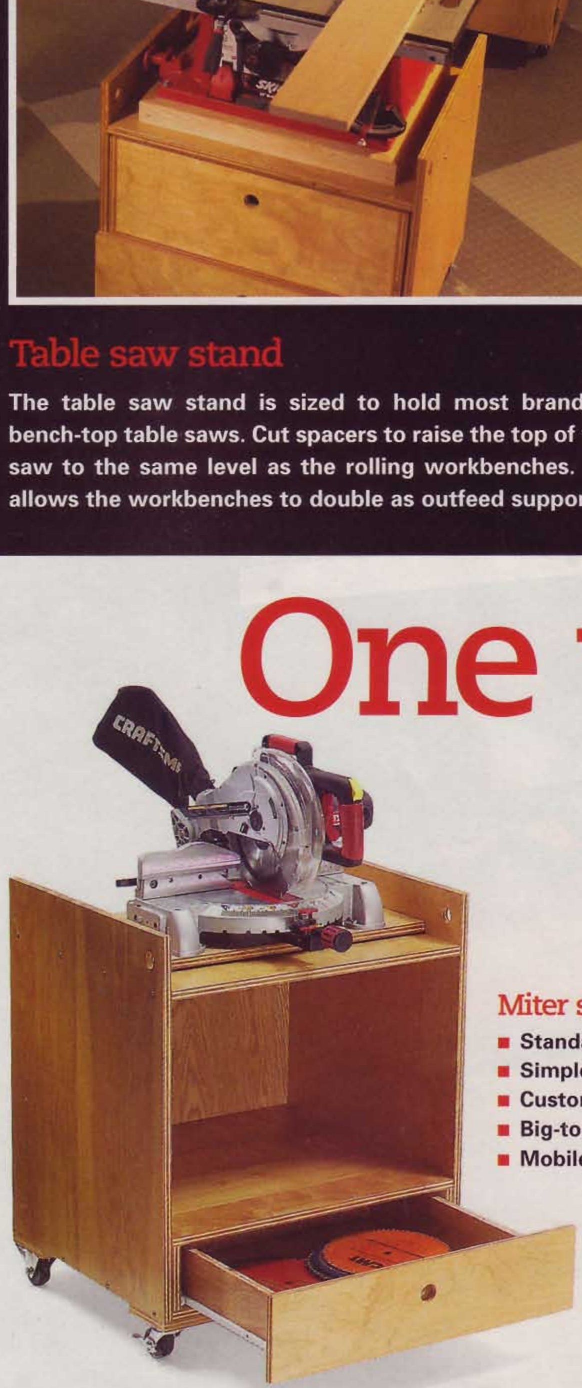
Table saw stand

The table saw stand is sized to hold most brands of bench-top table saws. Cut spacers to raise the top of your saw to the same level as the rolling workbenches. This allows the workbenches to double as outfeed supports.

Workbench with drawers

This workbench has one drawer that's large enough to hold small power tools like sanders, jigsaws and drills. The other two drawers can hold hardware or other shop supplies. The drawers are mounted on inexpensive, epoxy-coated slides.

One workshop –

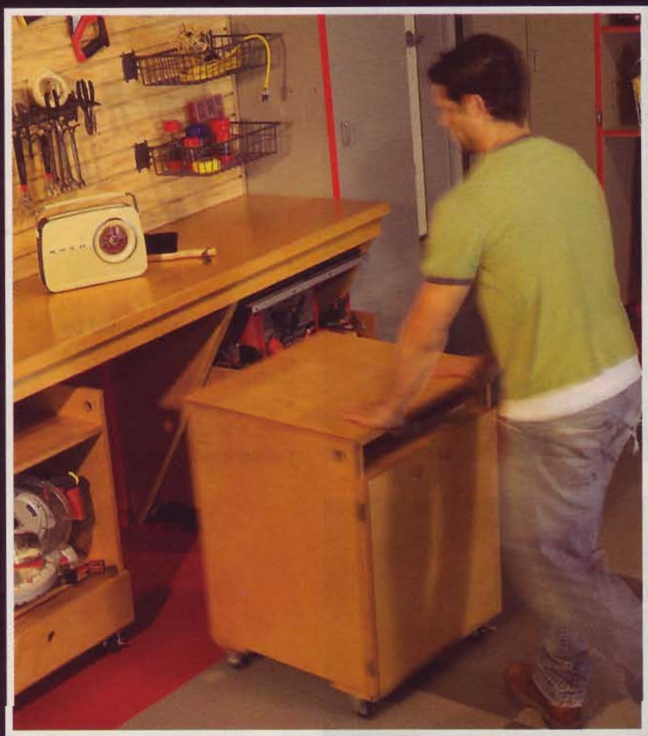


Miter saw stand

- **Standard frame**
- **Simple drawer**
- **Custom-fit shelf**
- **Big-tool storage**
- **Mobile**

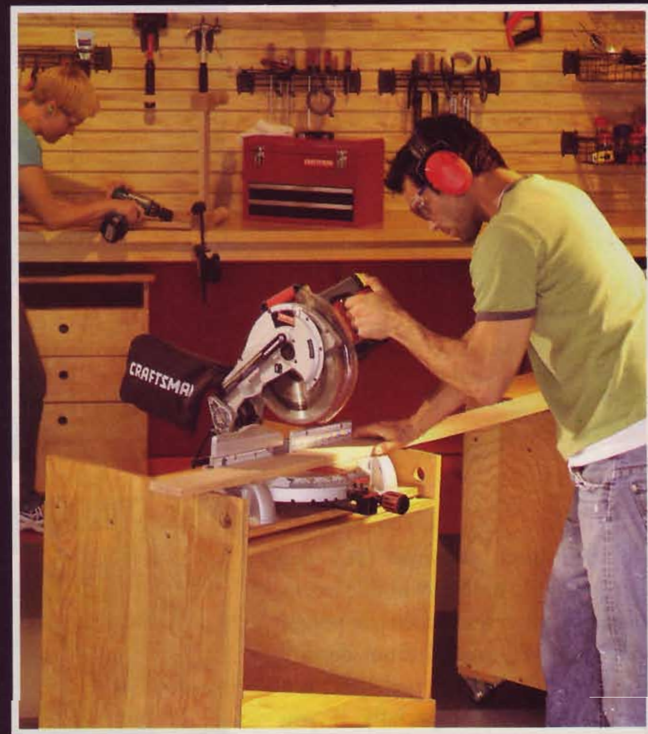
Do you have to spend half the day clearing your workbench every time you want to do a shop project? If so, these rolling workbenches and tool stands will solve the problem. Since they tuck under a freestanding workbench when they're not in use, they never get cluttered. And they're designed so all the top surfaces are at the same height, allowing you to use the rolling drawer or cabinet units to support long boards when you're sawing. In this article, we'll show you how to build four types of work stands. We'll also show you how to build in a solid, wall-mounted workbench to slide the carts under.

The starting point for each of the units is a simple plywood box. Then you add doors, drawers or shelves and attach casters to create the rolling tool carts and workbenches. Assembly is straightforward. The joints are simply butted together and fastened with wood glue and screws.



Workbench with doors

Doors rather than drawers make this workbench a little easier to build. It's a perfect place to store small power tools in their cases. Casters allow you to easily roll the bench in and out.



Miter saw stand

Store the miter box on the lower shelf and you can roll the stand under the workbench for out-of-the-way storage. Set it on top and the saw bed aligns perfectly with the rolling workbenches, allowing them to serve as outfeed supports.

—endless options...

The most critical step is to cut the plywood accurately. We used a circular saw to cut the 4 x 8-ft. panels down to manageable sizes, and then cut them to final size on a table saw. If you don't own a table saw, you can use a circular saw and straightedge guide (**Photo 1**). It'll just take longer. See "Sharpen Your Skills" on p. 35 for helpful hints on how to cut plywood without splintering it. Expect to spend about three or four hours building each unit, and another four hours building and mounting the workbench. The cost will range from $65 to $115 per bench.

In addition to basic hand tools, you'll need at least one drill for driving the screws, but it's handy to have two. Keep one drill set up with a pilot hole bit and the other with a driver bit. You'll need a 7/64-in. drill bit to drill pilot holes for the washer head screws, and a countersink bit for the flathead screws (**Photo 9**). A table saw and miter saw will simplify cutting the plywood and trim pieces.



Table saw stand
- **Sawdust drawer**
- **Accessories drawer**

Workbench with storage
- **Worktop**
- **Cabinet doors**

Workbench with drawers
- **Worktop**
- **Drawers**



Miter saw stand

We used birch plywood ($65 per sheet) to build each cart in this workshop, but other less expensive panels will work well too. Medium-density fiberboard (MDF; $25 per sheet) is a good alternative, especially if you plan to paint it. It takes a little over one 4 x 8-ft. sheet to build each unit. To get a rough estimate of the cost, add $20 for four casters plus $10 to $15 for drawer slides or hinges to the cost of a 4 x 8-ft. sheet of plywood. The wall-mounted workbench cost



1 Cut the plywood to size according to the Cutting List. Use a straight cutting guide and a sharp saw blade to make clean finish cuts.



2 Spread glue along the edges and clamp the sides (A) to the bottom (B). Drill pilot holes and drive special "washer head" screws.

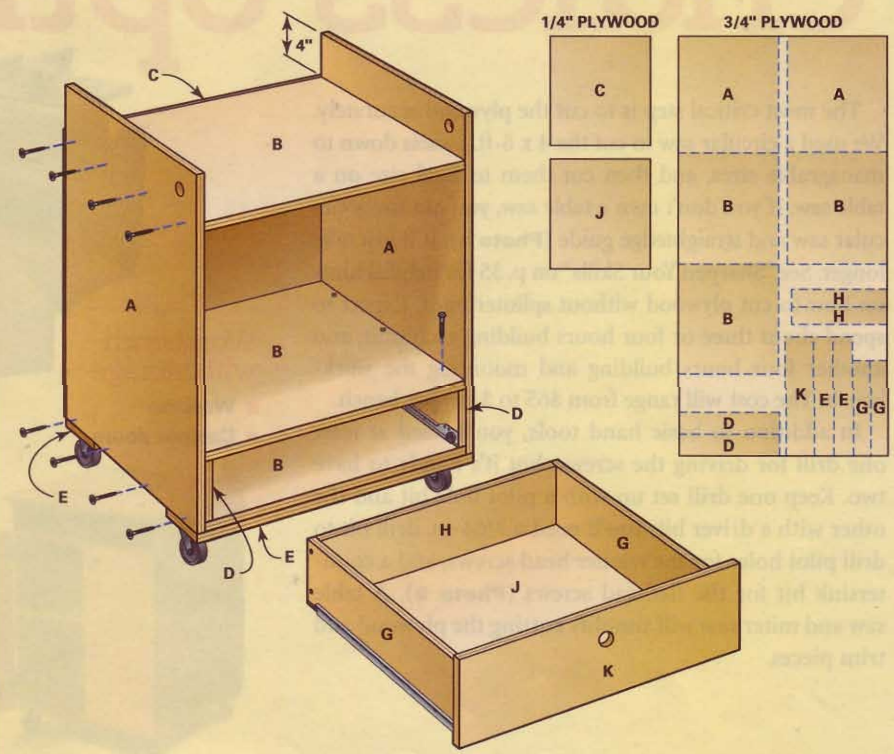
Miter Saw Stand Materials List

ITEM	QTY.
4' x 4' 1/4" plywood	1
4' x 8' 3/4" plywood	1
22" stay-shut drawer slides	1 set
2-1/2" rubber casters	4
3/16" x 1" lag screws and washers	16
No. 8 x 1-1/2" washer head screws	16
No. 8 x 1-1/2" wood screws	20
No. 8 x 1-1/4" wood screws	24
No. 17 x 1" wire nails	1 box
Wood glue	

Miter Saw Stand Cutting List

KEY	PCS.	SIZE & DESCRIPTION
A	2	3/4" x 23" x 29-1/4" plywood sides
B	3	3/4" x 23" x 26" plywood bottom and shelves
C	1	1/4" x 27-1/2" x 25-1/4" plywood back
D	2	3/4" x 5" x 23" shelf supports
E	2	3/4" x 4-1/2" x 27-1/2" cleats
F	-	Not used for this project
G	2	3/4" x 4" x 22" drawer sides
H	2	3/4" x 4" x 22" drawer front and back
J	1	1/4" x 23-1/2" x 22" drawer bottom
K	1	3/4" x 6-1/2" x 27-1/2" drawer front

Figure A
Miter saw stand



Cutting diagram

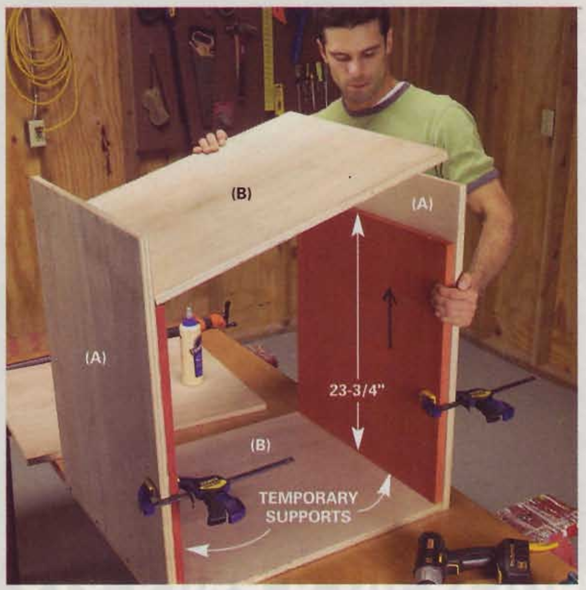
about $200 (see p. 79 for the Materials List). We've included a Materials List and Cutting List with dimensioned drawings for each of the four types of rolling stands and the workbench. The stand shown on the far left in the photo on p. 58 holds a planer. We had to widen the stand and reduce the drawer height to fit our planer (made by Delta).

Assembly details

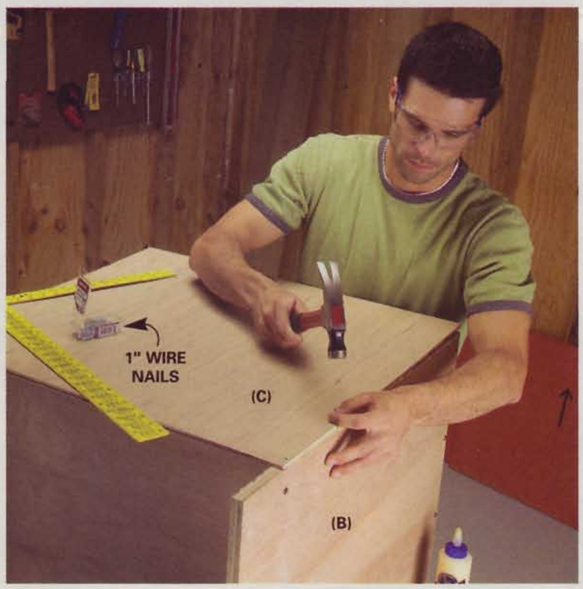
Photos 1 – 11 show how to build the miter saw stand. The table saw stand is similar, but we reduced the shelf height to make the top of the saw even with the other benches (**Figure B**). That way you can use the other benches as outfeed tables. We also added a sawdust-collecting box. Even though we've sized these two stands to hold most miter saws and bench-top table saws, make sure to measure the depth, width and height of your saws before you build the stands. Then adjust the dimensions to fit. Rather than positioning the shelves (B) at exactly the right heights, we left them low and shimmed up the saws until their tops were level with the door and drawer units. Then you simply change the shims if you replace a saw with one of a different size.

The cabinets for the door and drawer units are the same. The photos on p. 74 show how to mount doors. The hinges are simple to install and allow vertical adjustments. If the doors are too tight, you'll have to trim them. If the gap between doors is uneven, something is a little out of square. You can cheat and disguise the problem by shimming under one or more of the hinges with thin strips of cardboard until the space between the doors is even.

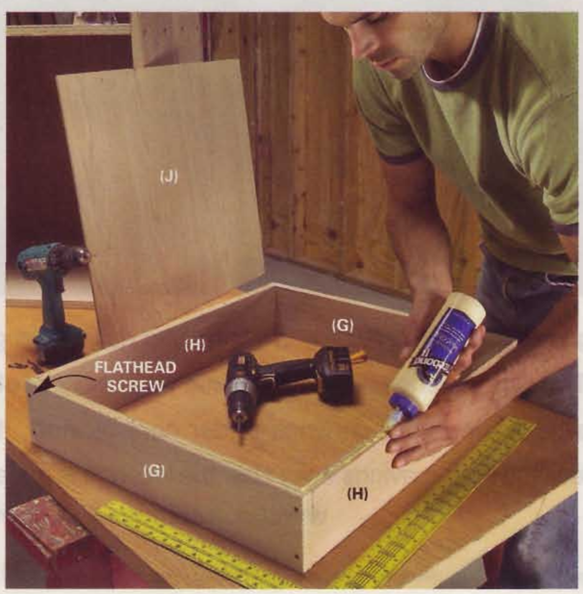
Photo 10 shows mounting the casters. We used fixed casters in back and locking casters in front for extra stability. Using swiveling casters on all four corners makes it easier to position the units, but they make the unit prone to shifting around a little in use. But go ahead and experiment to see which setup you prefer.



3 **Support the shelf (B) with temporary supports. Then drill pilot holes and glue and screw the sides to the shelf.**



4 **Apply glue to the back edges of the cabinet box, align one edge of the 1/4-in. back with the edge of the box and nail it. Adjust the cabinet box until it's perfectly square, then nail the remaining three sides.**



5 **Screw the drawer sides (G) to the back and front (H). Apply a bead of wood glue and nail one edge of the drawer bottom (J) to the drawer. Square the drawer and nail the other three sides.**

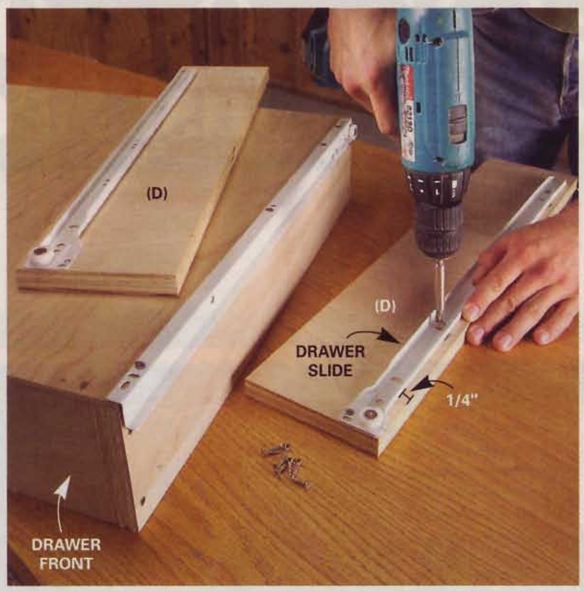
Drawer assembly

Building drawers is straightforward with the method shown here, but wait until you've constructed the cabinet to cut the drawer parts to their final size. Your cabinet size might vary slightly. Measure between the cabinet sides. On the table saw and miter box stands, make sure to set the shelf supports (part D; **Photo 7**) in place first and measure between them. Then subtract 1 in. from this measurement to determine the exact width of the drawers. Cut the sides, back and front to length and join them with glue and screws (**Photo 5**). Cut the plywood bottom to the dimensions of the drawer, being careful to cut it perfectly square, and glue and nail it to the bottom of the drawer (**Photo 5**).

One half of the two-piece drawer slides wraps around the bottom edge of the drawer. The wheel goes to the back of the drawer (**Photo 6**). The other half of the drawer slide mounts to the cabinet, with the wheel in front. **Photo 7** shows how to mount the drawer slides for the table and miter saw stands. **Photo 1** on p. 76 shows how to mount the drawer slides for the drawer unit. The Buyer's Guide lists the parts needed. Test the operation of the drawers before you install the fronts.

oops **We later discovered that the drawers require magnets to hold them shut when you're moving the workbenches. We mounted rare-earth magnets on the 3/4-in.-wide plywood edge behind each drawer front.**

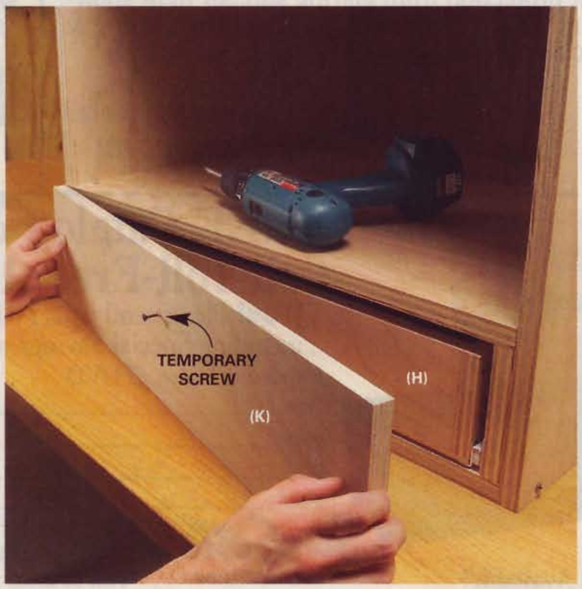
Attaching the drawer fronts after the drawers are installed allows you to align the fronts perfectly, even if the drawers are a little off. The trick is to hold the fronts in place and attach them temporarily. **Photo 8** and **Photo 2** on p. 76 show how. Then you can open the drawer and attach the front permanently by screwing through from the inside (**Photo 9**). We drilled 1-1/4-in. finger holes in each drawer, but you could install knobs instead. Use a



6 **Align the front edge of the drawer slide with the front of the drawer box and attach it with the screws provided. Attach the other half of the slide 1/4 in. from the bottom of the shelf support (D).**



7 **Rest the shelf support (D) on the bottom of the box and attach it to the cabinet sides with four flathead screws.**



8 **Locate the center of the finger hole and drive a screw until the tip barely protrudes from the backside of the drawer front. Align the drawer front with the cabinet and drive the screw to hold the drawer front in position.**

1-1/4-in. hole saw to drill the holes. Clamp a scrap of wood on the backside to prevent splintering when you drill the hole.

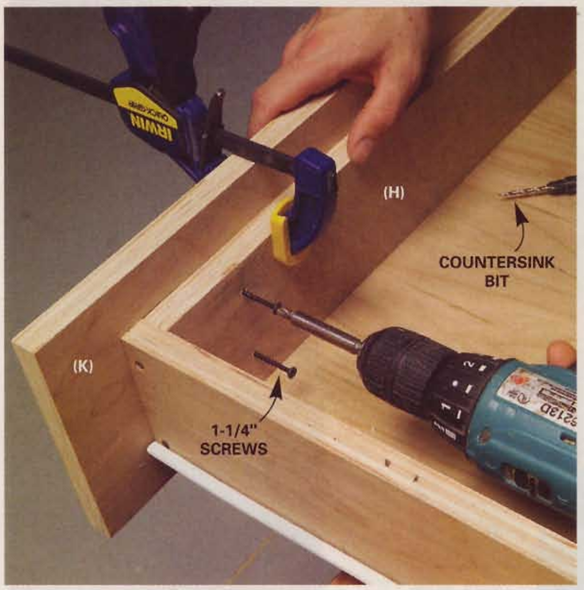
EDITOR'S NOTE:

Choosing bench materials

It's tough to recommend what material to use for these benches. We chose birch plywood because it's durable and good looking. But let's face it—it's extravagant for garage workbenches. For my home workshop, I'd probably use MDF (medium-density fiberboard). It costs about half as much as birch plywood, and you don't have to worry about splintering the veneer or keeping track of which way the grain is running. MDF does have drawbacks, however. It's heavy, the sawdust is fine and difficult to control, and it chips easily if you bump an edge. But it's a great choice if you plan to paint the workbenches.

Go ahead and send me your innovations.

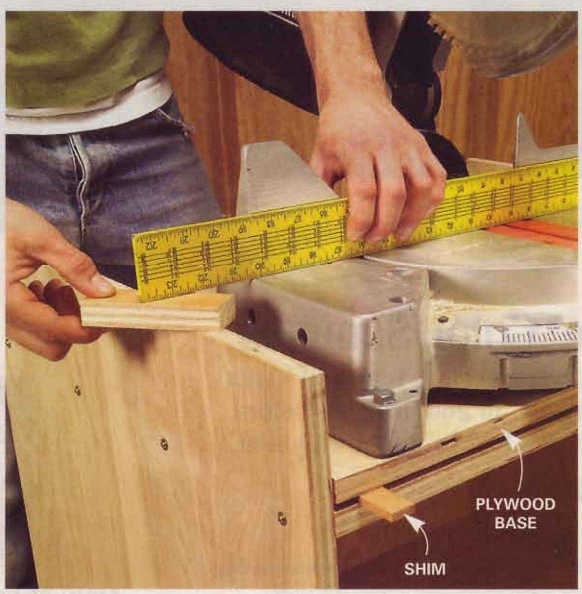
—Jeff



9 **Open the drawer, clamp the front, and drive four screws from the backside to permanently attach it.**



10 **Screw the plywood cleat (E) to the bottom of the cabinet with 1-1/4-in. screws. Drill pilot holes and attach the casters with 1-in. lag screws.**



11 **Mount the miter saw on a 3/4-in. plywood base. Then shim the base to elevate the top of the miter saw 3/4 in. above the sides of the cabinet (level with the door and drawer units). Glue the shims to the bottom of the plywood miter saw base.**

Buyer's Guide

ROCKLER: (800) 279-4441. www.rockler.com.

- 1/2-in. Rare Earth magnets, No. 30810, $6.79 per pack of 10.
- 1/2-in.-dia. magnet cups, No. 31668, $5.19 per pack of 10.
- 1/2-in. magnet washers, No. 37474, $4.69 per pack of 10.

WOODWORKER'S HARDWARE: (800) 383-0130. www.woodworkers-hardware.com.

- Blum Epoxy-Coated Drawer Slides, No. B230 M 22WH, $3.82 per set.
- 2-1/2-in. rubber wheeled casters: Rigid caster, No. JH25 R, $3.67 each Swivel caster, No. JH25 S, $4.19 each. Swivel with brake, No. JH25 SB, $4.86 each.
- Door hinges: Amerock No. A07550 BB 1/2-in. overlay hinge. $1.62 each.

Continued on p. 72



Table saw stand

Unlike on the miter box stand, which has a compartment for storing the saw, on this stand the table saw remains mounted to the top. This table saw stand will fit most bench-top table saws, but measure yours first to make sure. Then calculate the exact shelf height required to place the top of your saw flush to the other workbenches. We raised our saw to the right height with strips of wood ripped to the correct thickness and screwed to the top of the stand (see **opening photo** on p. 59).



1 **Build a plywood box to hold the sawdust. Then cut a hole a few inches smaller than the base of the saw to allow sawdust to drop into the box.**

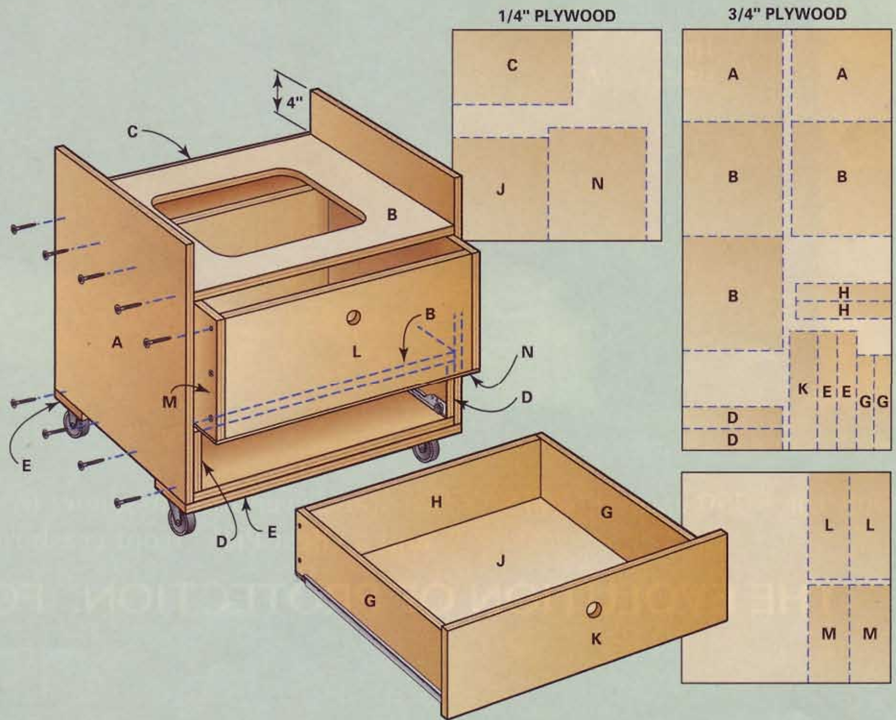
Table Saw Stand Materials List

ITEM	QTY.
4' x 4' 1/4" plywood	1
4' x 8' 3/4" plywood	1-1/4
22" drawer slides	1 set
2-1/2" rubber casters	4
3/16" x 1" lag screws and washers	16
No. 8 x 1-1/2" washer head screws	16
No. 8 x 1-1/2" wood screws	20
No. 8 x 1-1/4" wood screws	24
No. 17 x 1" wire nails	1 box
Wood glue	

Table Saw Stand Cutting List

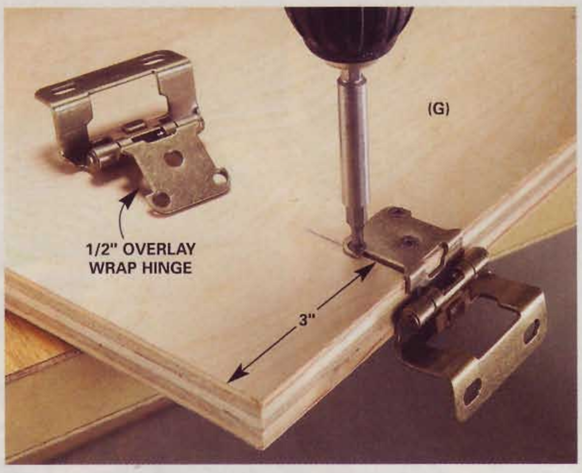
KEY	PCS.	SIZE & DESCRIPTION
A	2	3/4" x 23" x 21" plywood sides
B	3	3/4" x 23" x 26" plywood bottom and shelves
C	1	1/4" x 27-1/2" x 17" plywood back
D	2	3/4" x 5" x 23" shelf supports
E	2	3/4" x 4-1/2" x 27-1/2" cleats
F	-	Not used for this project
G	2	3/4" x 4" x 22" drawer sides
H	2	3/4" x 4" x 22" drawer front and back
J	1	1/4" x 23-1/2" x 22" drawer bottom
K	1	3/4" x 6-1/2" x 27-1/2" drawer front
L	2	3/4" x 9-1/4" x 24" front and back
M	2	3/4" x 9-1/4" x 22-1/2" sides
N	1	1/4" x 22-1/2" x 25-1/2" bottom

Figure B
Table saw stand

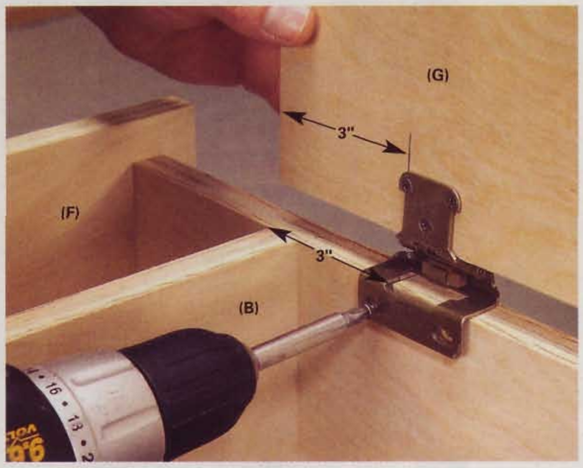


Cutting diagram





1 Mark the doors 3 in. from the top and bottom. Align the hinges with the marks and screw them to the doors.

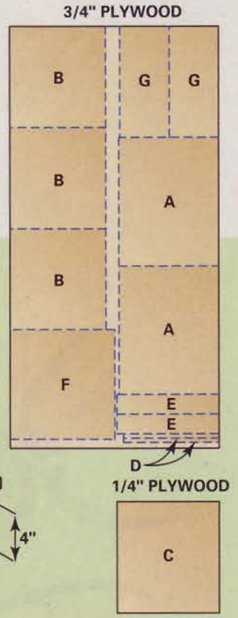


2 Mark the face of the cabinet box 3 in. from the top and bottom. Align the edge of the hinge cutout with the mark and screw the hinge to the cabinet.

Workbench with doors

The cabinets for the door and drawer workbenches are identical. We mounted a permanent shelf in this cabinet and then installed doors with wrap-around hinges. The hinges are inexpensive and easy to install but are only adjustable up and down. If the space between the doors is uneven, you can trim the doors or cut thin cardboard shims to fit under the hinges. Since no drawer construction is required, this is the easiest workbench to build.

Cutting diagram



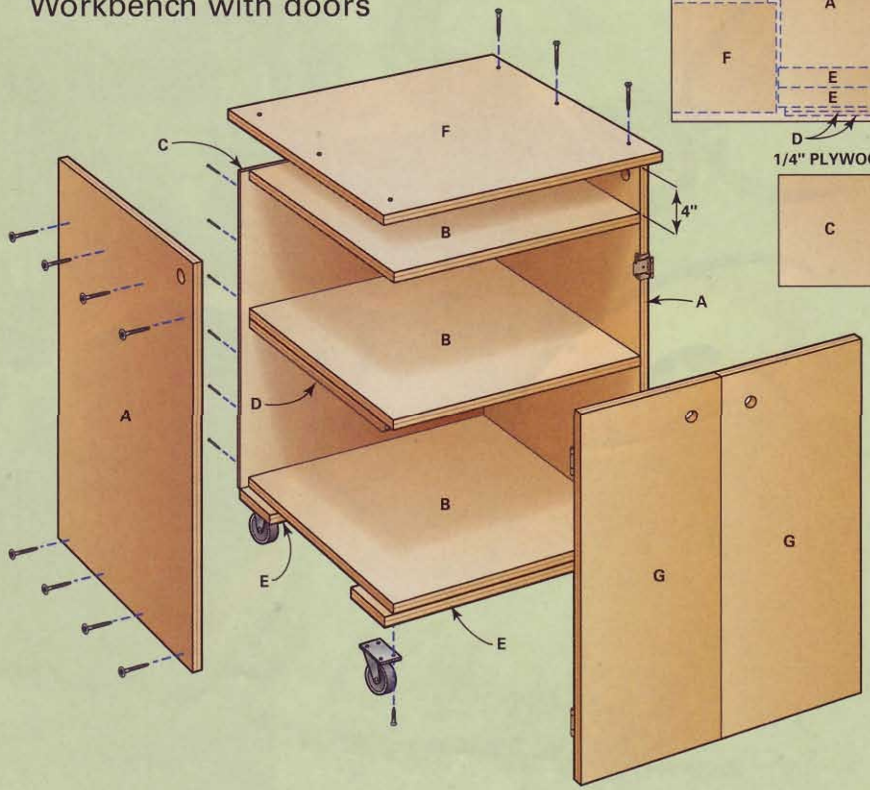
Workbench with Doors Materials List

ITEM	QTY.
4' x 4' 1/4" plywood	1
4' x 8' 3/4" plywood	1
1/2" wrap hinges	2 pair
2-1/2" rubber casters	4
3/16" x 1" lag screws and washers	16
No. 8 x 1-1/2" washer head screws	16
No. 8 x 1-1/2" wood screws	20
No. 8 x 1-1/4" wood screws	24
No. 17 x 1" wire nails	1 box
Wood glue	

Workbench with Doors Cutting List

KEY	PCS.	SIZE & DESCRIPTION
A	2	3/4" x 23" x 29-1/4" plywood sides
B	3	3/4" x 23" x 22" plywood bottom and shelves
C	1	1/4" x 23-1/2" x 25-1/4" plywood back
D	2	3/4" x 1" x 22" shelf supports
E	2	3/4" x 4-1/2" x 23-1/2" cleats
F	1	3/4" x 24" x 25" top
G	2	3/4" x 11-3/8" x 25-1/4" doors

Figure C
Workbench with doors



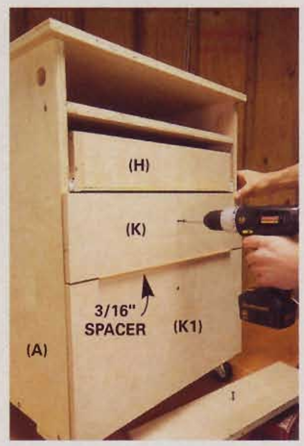


Workbench with drawers

Build the drawers for this workbench following the procedure shown in **Photo 5**, p. 64. Then mount half of each drawer slide to the drawer and the other half directly to the cabinet sides. See "Drawer Slides" in **Figure D** below for the drawer slide locations.

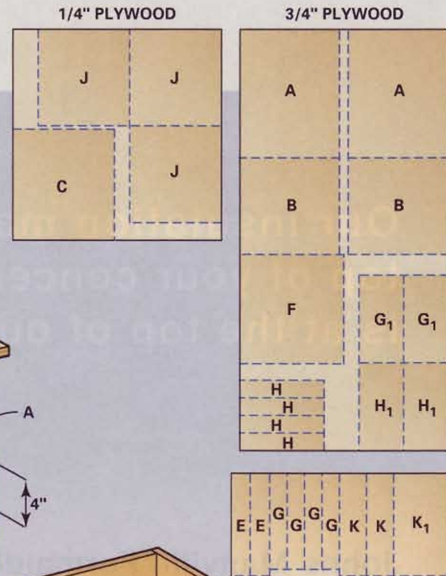


1 Mark the drawer slide locations on the cabinet sides (Figure D). Position the drawer slides flush with the front edge and screw them to the cabinet.



2 Mount the drawers and screw the drawer fronts to the drawers using the same procedure shown in Photo 8 on p. 66. Use a 3/16-in. strip of wood to space the fronts evenly.

Cutting diagram



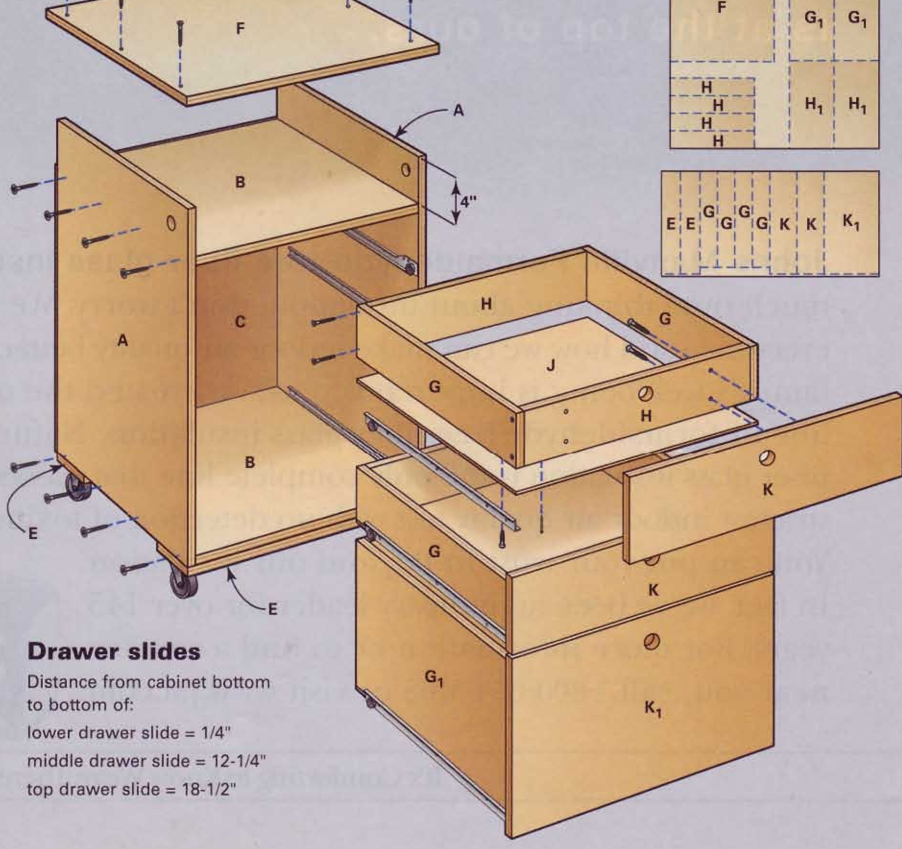
Workbench with Drawers Materials List

ITEM	QTY.
4' x 4' 1/4" plywood	1
4' x 8' 3/4" plywood	1-1/4
22" drawer slides	3 sets
2-1/2" rubber casters	4
3/16" x 1" lag screws and washers	16
No. 8 x 1-1/2" washer head screws	16
No. 8 x 1-1/2" wood screws	34
No. 8 x 1-1/4" wood screws	24
No. 17 x 1" wire nails	1 box
Wood glue	

Workbench with Drawers Cutting List

KEY	PCS.	SIZE & DESCRIPTION
A	2	3/4" x 23" x 29-1/4" plywood sides
B	2	3/4" x 23" x 22" plywood bottom and shelf
C	1	1/4" x 23-1/2" x 25-1/4" plywood back
D	-	Not used for this project
E	2	3/4" x 4-1/2" x 23-1/2" cleats
F	1	3/4" x 24" x 25" top
G	4	3/4" x 4" x 22" drawer sides
G1	2	3/4" x 10-1/4" x 22" drawer sides
H	4	3/4" x 4" x 19-1/2" drawer fronts and backs
H1	2	3/4" x 10-1/4" x 19-1/2" drawer fronts and backs
J	3	1/4" x 21" x 22" drawer bottoms
K	2	3/4" x 6-1/4" x 23-1/2" drawer fronts
K1	1	3/4" x 12-1/2" x 23-1/2" drawer front

Figure D
Workbench with drawers



Drawer slides

Distance from cabinet bottom to bottom of:

lower drawer slide = 1/4"

middle drawer slide = 12-1/4"

top drawer slide = 18-1/2"



Workbench assembly

Angle braces simplify the workbench construction and keep the floor clear for sweeping. **Figure E** and **Photos 1 – 3** show how to build the workbench. Since the braces extend to the floor, where they'll rest against the bottom plate of the wall framing, there's no need to align them with wall studs. If your garage has a concrete ledge along the bottom, reduce the height of the braces to compensate for the ledge. The length of the workbench and the placement of the angle braces accommodate a tool stand on each end and one tool stand flanked by door or drawer units in the middle. If you want a different configuration, adjust the dimensions accordingly. Cut the 2x4s and screw them together according to the Cutting List on p. 79 and **Figure E**. Then

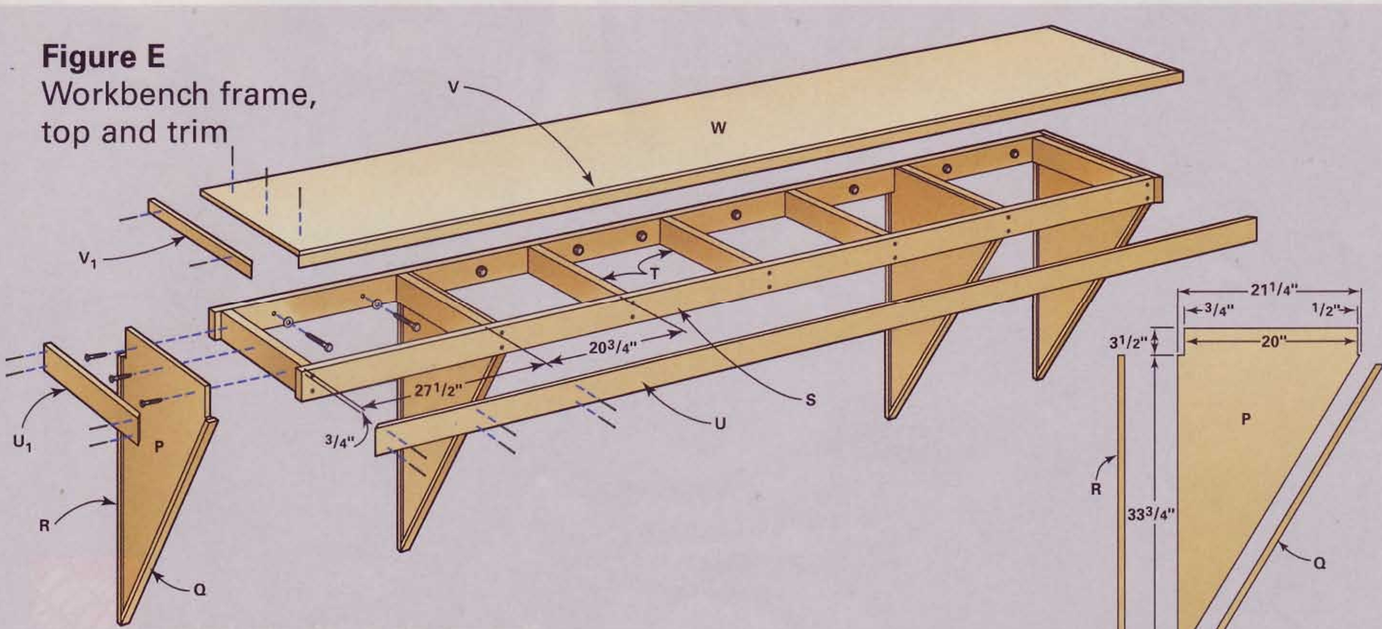


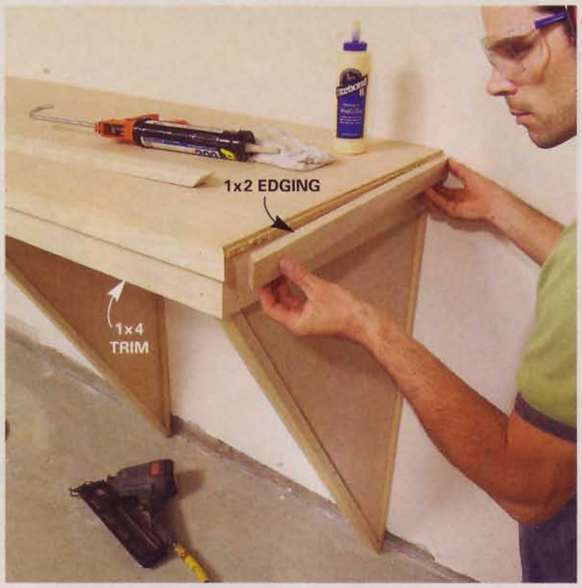
1 **Screw 2x4s together according to the dimensions in Figure E. Draw a level line on the wall at 39-1/4 in. above the floor. Locate the wall studs and attach the workbench frame by driving a 4-1/2-in. lag screw at each stud. Level the frame and support it with temporary boards.**



2 **Assemble four angle supports according to Figure E and screw them to the frame in the locations shown.**

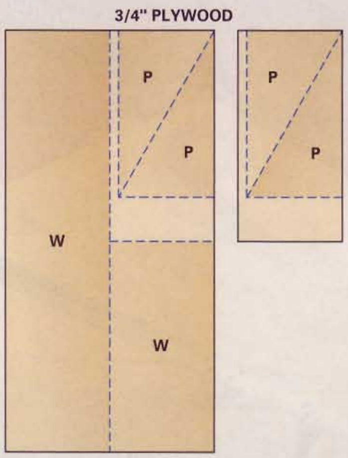
Figure E
Workbench frame, top and trim





3 Nail 1x4 trim over the face of the 2x4 frame. Then cut the plywood top. Glue and nail the plywood. Finally, glue and nail 1x2 edging to the plywood.

Cutting diagram



mount it as shown in **Photo 1**. Position the braces (**Figure E**) and screw them to the frame. Use a level to make sure each brace is vertical. Then drill a pilot and countersink hole and drive one screw through the 1x2 flange into the bottom wall plate to hold the brace in this position. Cover the outside 2x4 with a 1x4 trim board. Cut plywood for the top and glue and nail it to the 2x4 framing. Use 8d finish nails and countersink the heads. Complete the bench top by gluing and nailing a 1x2 to the plywood edge.

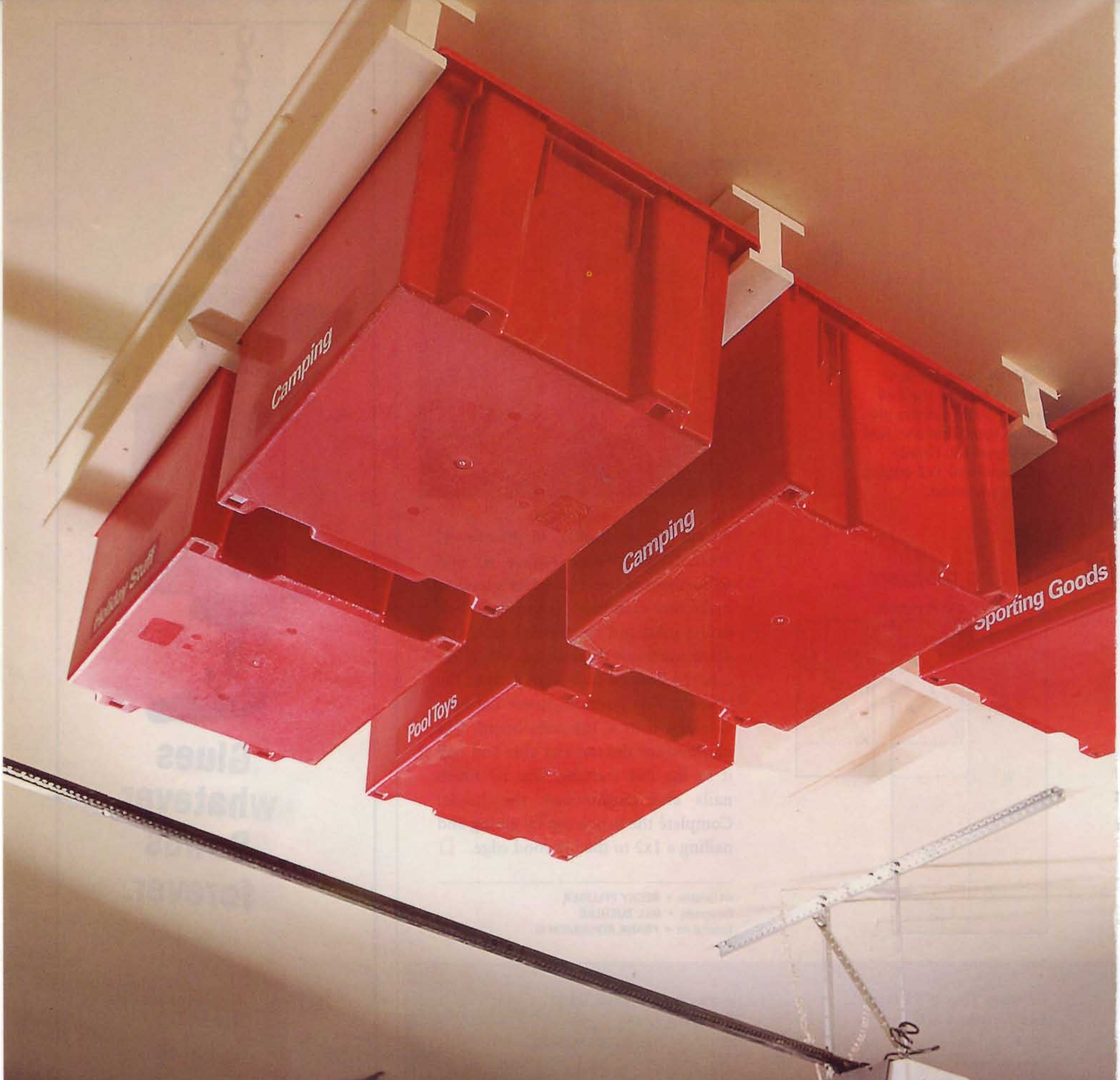
Art Direction • BECKY PFLUGER
Photography • BILL ZUEHLKE
Technical Art • FRANK ROHRBACH III

Frame, Top and Trim Materials List

ITEM	QTY.
2x4 x 14' spruce, pine or fir (S, T)	3
4' x 8' 3/4" sheets of plywood (P, W)	1-1/4
1x2 birch or maple (Q, R, V, V1)	46'
1x4 birch or maple (U, U1)	18'
3/8" x 4-1/2" lag screws and washers	10
No. 8 x 3" wood screws	32
No. 8 x 1-1/2" wood screws	16
8d finish nails	1 lb.
Wood glue	

Frame, Top and Trim Cutting List

KEY	PCS.	SIZE & DESCRIPTION
P	4	3/4" x 21-1/4" x 37-1/4" plywood angles
Q	4	3/4" x 1-1/2" x 43" (cut angles to fit) birch trim
R	4	3/4" x 1-1/2" x 35" birch trim
S	2	141" 2x4 framing
T	7	20" 2x4 framing
U	1	3/4" x 3-1/2" x 144" (miter ends to fit)
U1	2	3/4" x 3-1/2" x 25" (miter end to fit)
V	1	3/4" x 1-1/2" x 145" (miter ends to fit)
V1	2	3/4" x 1-1/2" x 25" (miter end to fit)
W	2	3/4" x 23-3/4" plywood top


Camping
Holiday Stuff
Camping
Sporting Goods
Pool Toys


Sporting Goods
Holiday Stuff







Out-of-the-way Storage

Build this simple, slide-in storage system for your garage

by David Radtke

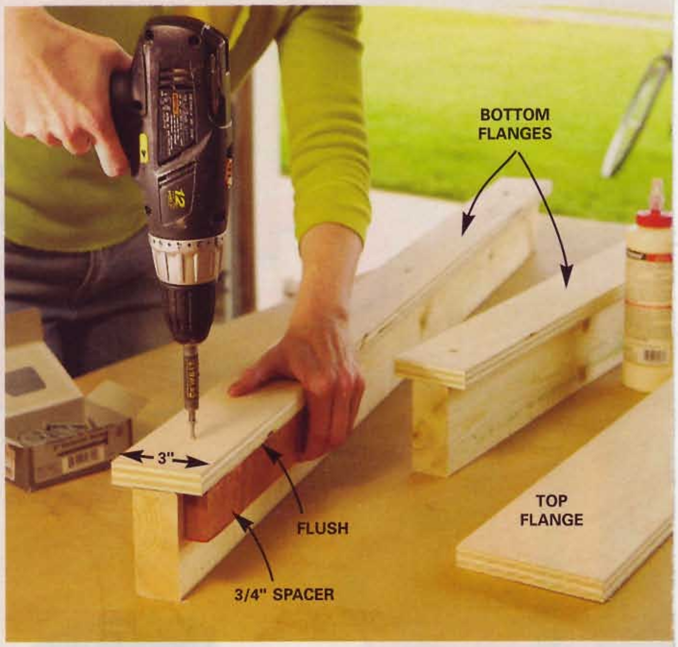
Are all those cardboard boxes in the corner of your garage driving you crazy? Holiday decorations, camping gear, seasonal clothing and extra bedding take up valuable space. And who can tell one brown box from another?

We've designed this system to get all that stuff up and out of the way and into unclaimed space near your garage ceiling. We built this handy system around special reinforced plastic totes that hang from carriages made from 2x4s and plywood strips. In this article, we'll show you how to assemble these simple carriages, align them perpendicular to the ceiling joists, then anchor them into place with lag screws. It's that easy. Add labels to the sides of the totes and you can tell at a glance where to find that long-term storage item. You can build and install the carriages in an afternoon and start organizing right away!





1 **Measure the top of the tote to determine the width of the tote rims (3/4 in.) and the size of the bottom flanges of the carriages (in our case, 3 in.).**



2 **Cut 3-in.-wide strips of 3/4-in. plywood for the bottom flange. Center them on 4-ft.-long 2x4s, then glue and screw them. Use 2-in. screws every 10 in.**



3 **Flip the carriage assemblies over. Center the 5-in.-wide plywood top flanges and glue and screw them to complete the carriage assemblies.**



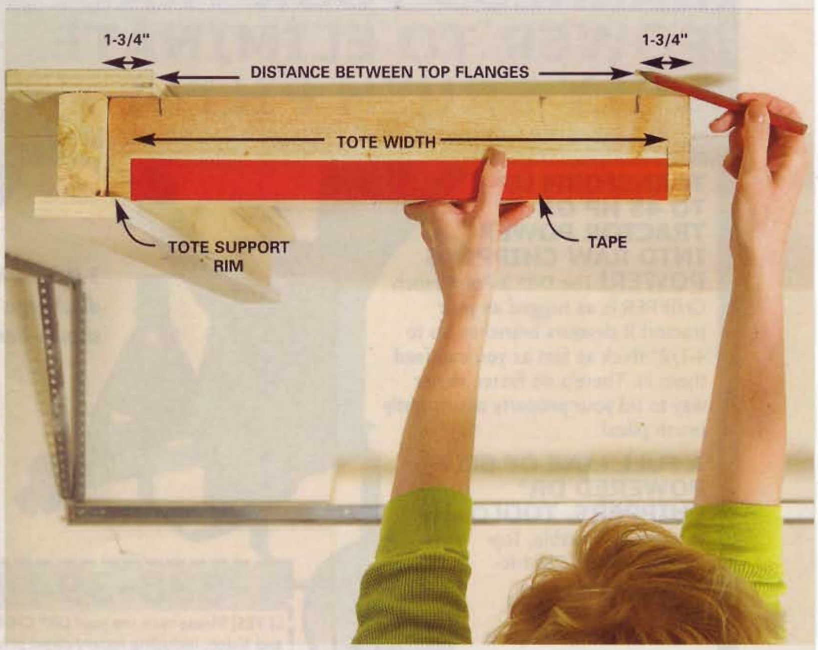
4 **Locate the ceiling joists with a stud finder and snap chalk lines to mark them. Probe with a finish nail to make sure the lines fall on joist centers.**

If you don't have unused space above the garage door, you can install this system just about anywhere. However, keep the totes at least 2 ft. from light fixtures, door springs and garage door openers.

The special reinforced totes (see Buyer's Guide, p. 86) we used are a bit stronger than those you'll find at home centers or department stores. The reinforced rims on these containers will support weights of 35 lbs. or more, which is perfect for lightweight storage. And the totes will be easy enough to lift into place while you're standing on a ladder. To be on the safe side, the total weight of all the totes shouldn't exceed 210 lbs., so find a different place to store books and heavy hardware. Custom plastic lids are also available for dust-free storage (see Buyer's Guide).



5 **Mark each carriage 12 in. from the end and align the mark with the joist location. Screw the carriage temporarily to each joist on one side of the flange with 3-in. screws.**



6 **Cut a 2x4 template from your tote dimensions and mark the location of the top edge of the next carriage. Mark the rear side as well, then screw it and the other carriages in place on one side only.**



7 **Check the fit of the totes and make sure the rims have maximum bearing on the lower flanges. Make any necessary adjustments.**



8 **Drill 3/16-in. pilot holes in the top flanges. Then drive pairs of 3-1/2-in. lag screws into each joist, removing the temporary screws as you go. Use a minimum of four lag screws per carriage.**

tip **Use a 6d finish nail to probe the drywall on each side of the joists to make sure you hit the center of each joist.**

This storage system is relatively inexpensive. Our special totes cost about $16 each, and the carriages, made from 2x4s and 3/4-in. plywood strips, cost about $26. With hardware, this six-bin project cost about $125. Just follow our step-by-step photos and get organized!

If you use other types of containers, measure the rims carefully and adjust the bottom flange width to assure full support. And no matter what joist spacing you find (24 in. or 16 in.), be sure to fasten the carriages with at least four lag screws.



9 Mark the centers of the carriages and screw a 1x2 stop along the marks. The stop will keep the totes from sliding too far into the carriages.

Editor's note

Before you order your totes, measure the height above your garage door and find totes that'll work. Our 13-in.-deep totes required 18 in. of clearance, including the carriages. For lower clearances, you can buy totes that are 8 and 10 in. deep but with the same top size.

Cutting List

QTY.	SIZE & DESCRIPTION
4	3/4" x 3" x 48" plywood bottom carriage flanges
4	3/4" x 5" x 48" plywood top carriage flanges
4	1-1/2" x 3-1/2" pine carriage stringers
1	3/4" x 1-1/2" x 8' pine stop strip*

*Based on the tote sizes we used

Materials List

ITEM	QTY.
2x4 x 8'	2
4' x 8' sheet of 3/4" plywood	1/2
1x2 x 8' pine stop strip	1
Carpenter's glue	1 pint
1/4" x 3-1/2" lag screws and washers	16
2" wood screws	1 box
3" wood screws	1 box
23-1/2" x 19-1/2" x 13" plastic totes	6

Buyer's Guide

You can buy storage totes from Simplastics at www.simplastics.com or (800) 966-9090.

We used No. snt-230-BL sold in quantities of three. Lids and shallower totes are also available.

You can also find totes at United States Plastic Corp., www.usplastic.com. The size equivalent SKU is 52005.

Art Direction • BOB UNGAR
Photography • BILL ZUEHLKE
Project Design • DAVID RADTKE

Classics

HANDY HINTS •

Great tips that never grow old!

Pipe-hanger clothes rod

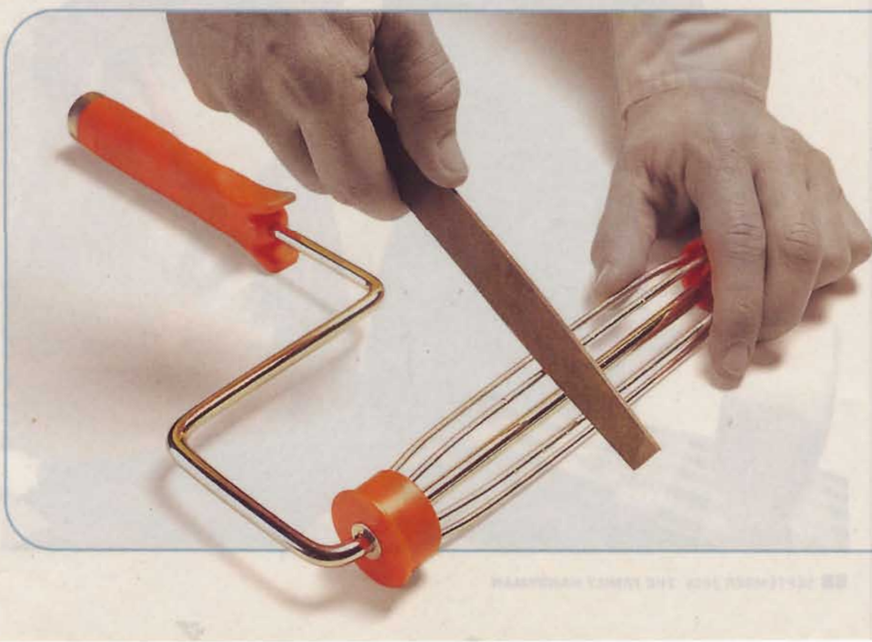
If you need a clothes rod in the laundry room and you have exposed joists, check out this simple and solid way to get it. Attach some 3/4-in. J-hooks (these are used for hanging pipe) to the joists and snap a 7/8-in. dowel into the curves.





Perfect profile sanding block

Intricate molding like this piece is challenging, if not impossible, to sand using ordinary sanding methods. To make a sanding block that perfectly matches the profile, put plastic wrap over the profile, then mix a two-part filler like Bondo and place it on the wrap. Close the wrap around the filler and let the filler stiffen into a block (the filler will heat up as it stiffens). In 30 minutes, your block will be ready to use. For wide, intricate profiles like the one shown, you may want to make two narrower blocks for the job.



Stay-put roller sleeves

This is for anyone who's been frustrated by roller sleeves that slip off the end of the roller frame as you paint. Use the corner of a metal file to cut a bunch of shallow notches into the bars of the roller frame. The sleeve will stay put for hours of painting.



Fix for a flat

Ever had a flat tire on your wheelbarrow where the rim became separated from the tubeless tire? When you try to refill the tire, the air just leaks out along the rim. Here's an old trick that should fix it. Make a loop in a rope, place the rope around the middle of the tire and through the loop, and pull back on the rope. The pressure will cause the sides of the tire to squish out and make contact with the rim. Then the tire will be sealed enough to hold air.

Corkscrew in a pinch

It's difficult to remember everything for that important date. You've picked up your suit at the cleaners; coordinated the tablecloth, napkins and candle; and chilled the champagne, only to discover you've forgotten the corkscrew. But your date is resourceful and has her toolbox handy. She drives a coarse-threaded deck screw into the cork, grabs the screwhead with a pliers, carefully pulls out the cork and rescues the evening.

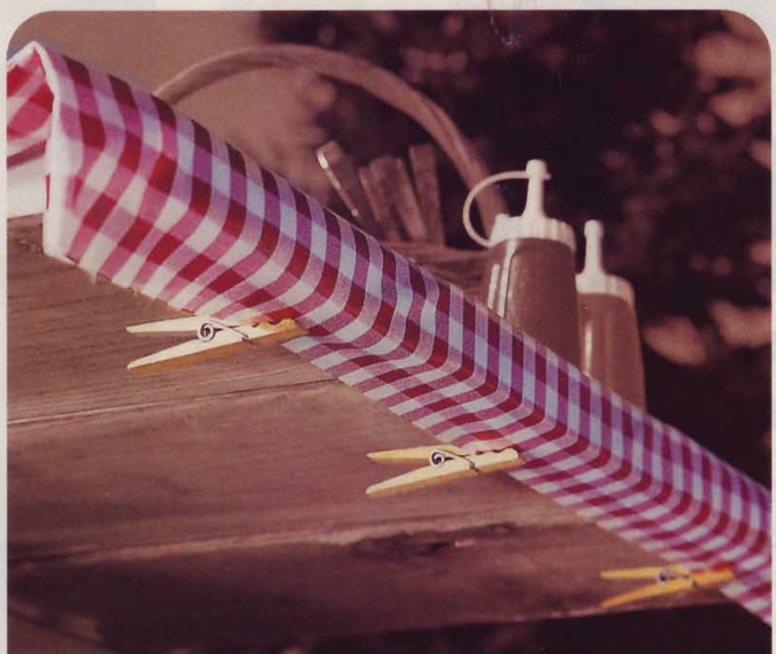






Weatherproof plant ID

Window blind slats make great plant identification stakes. Take an old set of blinds, remove the slats and snip them apart into 8-in. lengths, cutting one end to a point with a scissors or tin snips. Use a permanent marker to label the plant type or variety. Stick the slat into the soil next to your flowers or vegetables and you'll always know the plant type and variety.



Picnic tablecloth control

Imagine it's a beautiful sunny afternoon in July and your friends are over for a nice, relaxing picnic. The table is set and the brats are hot off the grill, but before you can say "please pass the ketchup," a gust of wind catches the tablecloth, turns it into a sail and sends the place settings to the dogs.

Here's a cool idea to avoid this hassle. Glue spring-type clothespins to the underside of the picnic table to clasp the tablecloth. Space the pins every 18 in. or so and apply epoxy resin (it's waterproof) to each. Hold them in place with tape until the epoxy dries. Then simply clip the tablecloth tightly to the table.

Art Direction • BOB UNGAR
Photography • BILL ZUEHLKE and MIKE KRIVIT

Remove for more open space



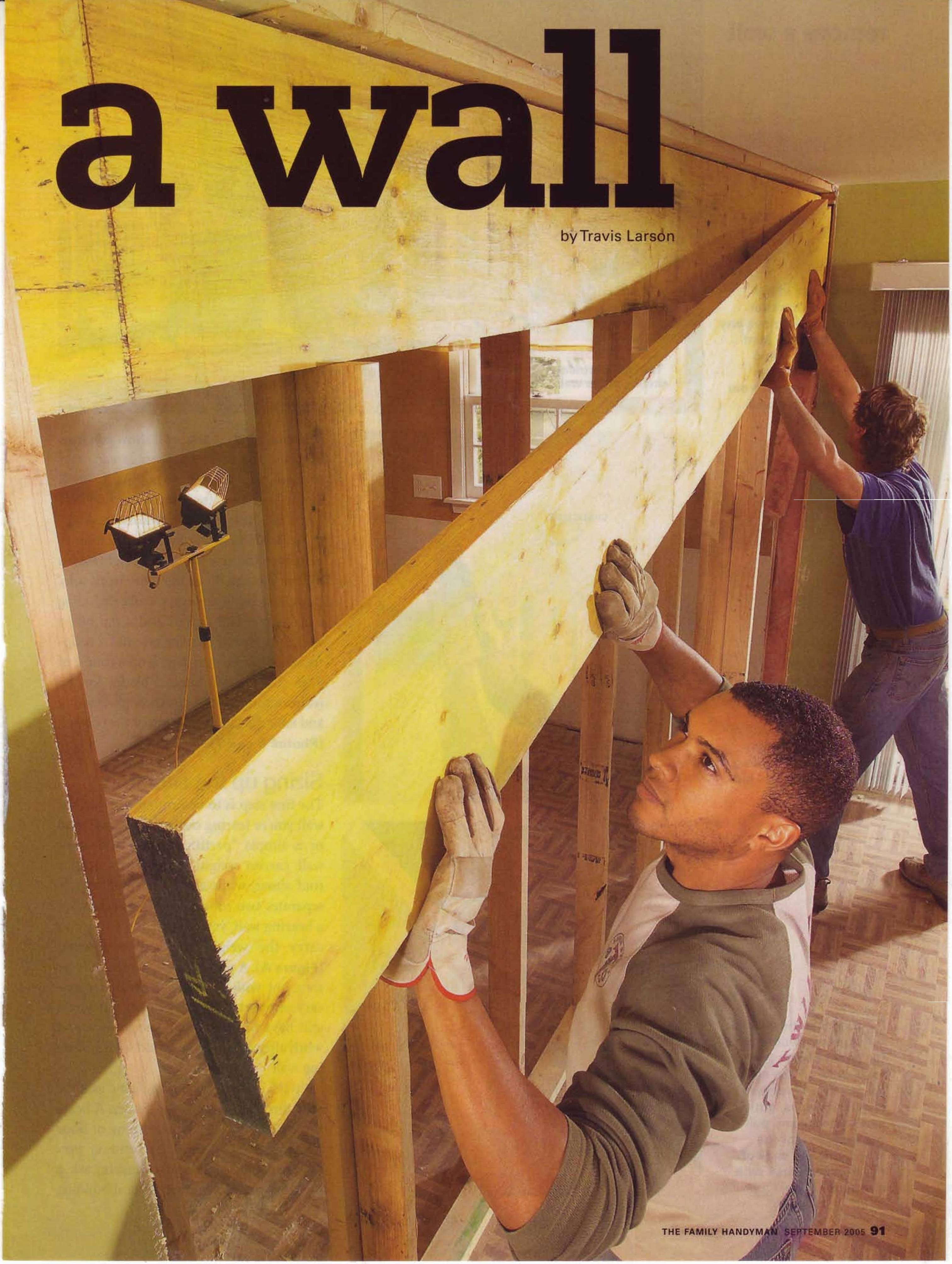
Enlarge your kitchen by removing a wall and replacing it with a beam. Here's how.

The best way to make small or cramped rooms larger is to remove a wall between adjoining rooms. You'll not only create a larger, more useful floor area but also give your home a feeling of spaciousness. You'll wind up with an area that seems absolutely huge compared with the sum of the individual rooms. With this project, you can create a cavernous master bedroom from two moderately sized ones, join a kitchen and a dining room to make them feel larger (our project) or create a "great room" by joining the dining and living areas. The framing materials for a typical 12-ft. opening will only run about $200. The bigger expenses will come after you complete the framing, when you restore the trim and redecorate (see "Editor's Note," p. 93).

In this story, we'll show you how to remove nearly any wall and tell you how to add a structural beam if it's needed. It may be scary to think about tearing walls out of your house, but don't be intimidated. You can do it if you've done any basic carpentry work like framing in a wall or building a shed or deck. In fact, removing the wall and replacing it with a beam will only take a half day or less. We'll show you how to build a temporary support wall to hold up the floor above while you tear out the old wall

a wall

by Travis Larson





1 Bang holes in the wall and check for obstructions. Remove any trim, slit the tape joint along the ceiling and adjoining walls, then remove the drywall from both sides of the wall.

CAUTION
Turn off electrical circuits in the wall.



2 Snap a chalk line about 12 in. out from the wall and cut a slot. Strip 1 ft. of ceiling drywall from one side of the wall. (Use shallow strokes to avoid nicking any electrical cables hidden in the ceiling.)



3 Examine the ceiling framing to determine the beam design (see text). Turn off the electrical power and remove electrical cables, outlets and switches and pull the cable free of the studs. Cap the ends of the exposed wires with electrical connectors.

(**Photos 1 – 7**). Then we'll show you how to create the beam supports at each end (**Photos 6, 7 and 11**). Finally, we'll demonstrate a foolproof method for installing the beam itself (**Photos 8 – 10**).

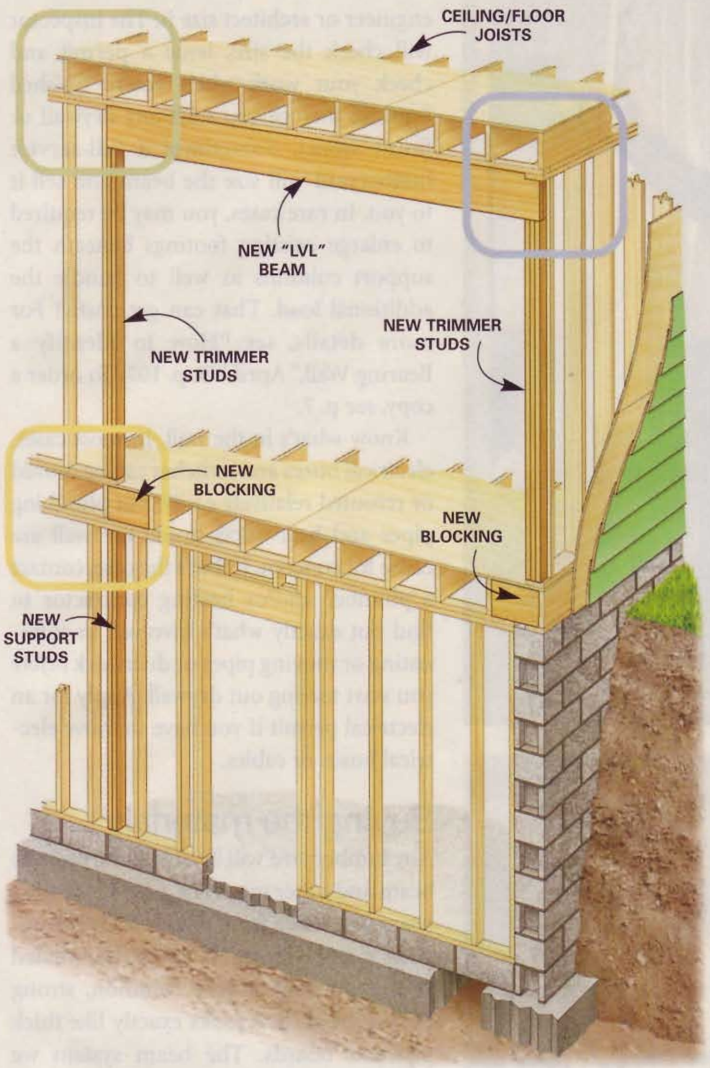
You'll need a helper for about an hour to help hoist the new beam into place (**Photo 9**), but you can do all the other work solo. Round up basic carpentry tools, including a cat's paw (nail puller) and a flat bar, a sledgehammer, a circular saw and a reciprocating saw. Be sure to pick up a couple of 8-in. coarse-tooth bimetal blades for the reciprocating saw to cut through framing and nails during demolition of the old wall (**Photos 6 and 7**).

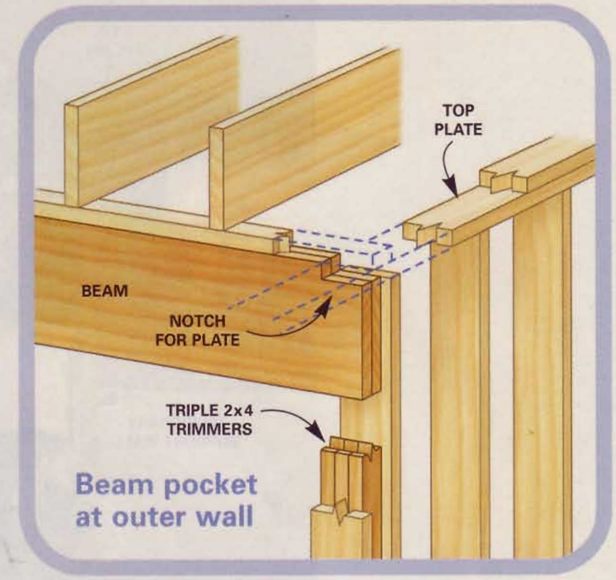
Sizing up the situation

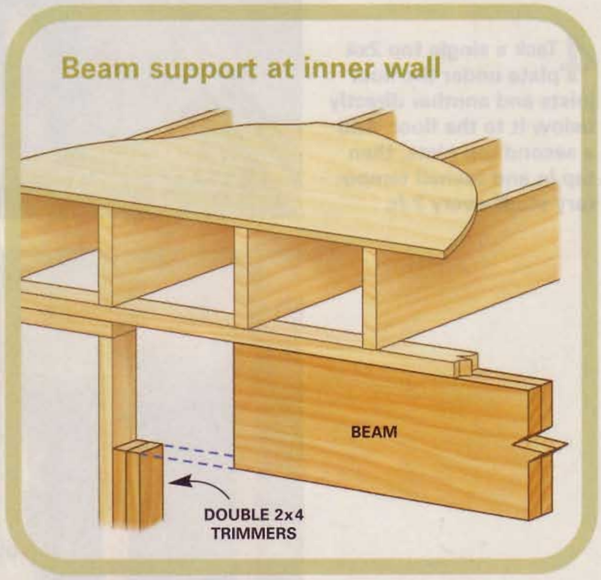
The first step is to determine whether the wall you're tearing out is a "bearing" wall or a simple "partition" wall. A bearing wall carries weight from floors and/or roof above, while a partition wall merely separates two rooms. When you remove a bearing wall, you have to add a beam to carry the weight the wall supported (**Figure A**). A partition wall can simply be torn out with no worries about temporary support walls or beams, but you'll still have to go through the same repair work afterward as you would with a bearing wall.

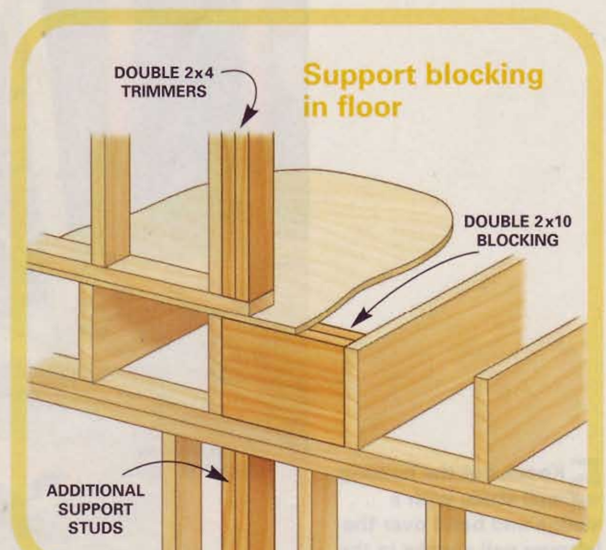
To tell if a wall is bearing, first check the joist direction with a stud finder. A bearing wall almost always has ceiling or floor framing (joists; **Photo 3**) running perpendicular to it. If you're unsure, ask a building contractor or your local building

Figure A
Bearing beam and support details









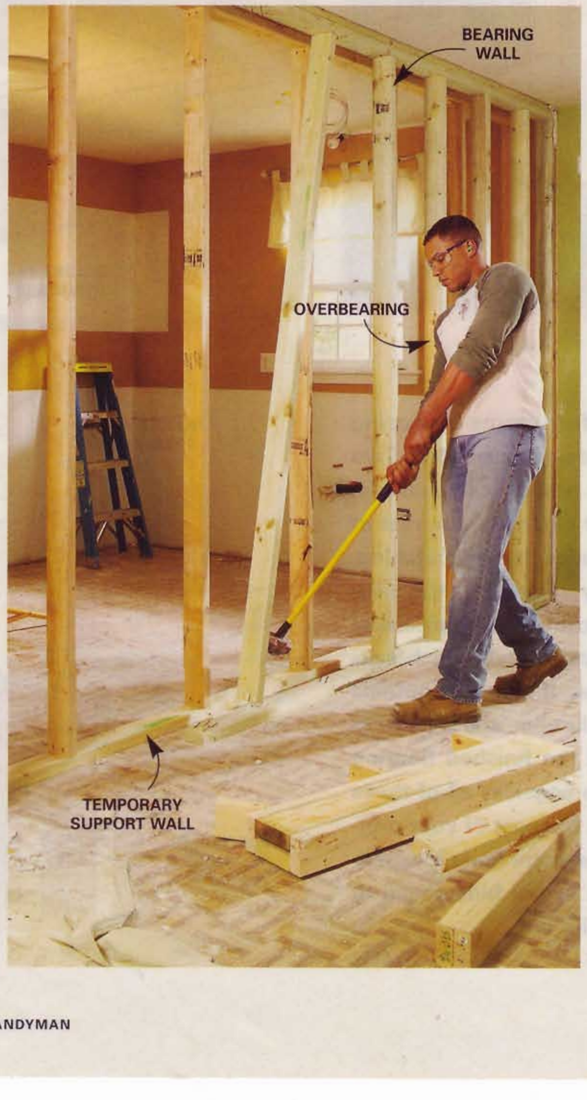
Editor's note

As a contractor, I opened up quite a few rooms by ripping out walls and replacing them with beams as needed. Two things always amazed my customers: how quickly and easily the beam part went and then how extensive the rest of the job was. That work generally includes drywall patching, respraying textured ceilings, entirely repainting the new room and replacing sections of wood trim. Usually electrical outlets and switches need to be repositioned, which calls for rerouting cable and rewiring devices. If the wall contains plumbing pipes or heating vents, a plumber and a heating contractor have to be called in. And the finished flooring always has to be replaced. Be sure to consider all of these secondary expenses when calculating the cost of your project. Most of the materials for those items are fairly inexpensive if *you* do the work, but it's best to get bids ahead of time for whatever work you plan to hire out.

—Travis



4 **Tack a single top 2x4 plate under the floor joists and another directly below it to the floor. Add a second top plate, then tap in and toenail temporary studs every 2 ft.**



5 **Knock out the bearing wall studs with a sledge and bend over the leftover nail shanks in the bottom plate to protect your feet.**

inspector for advice. If it's a bearing wall, the inspector may help size the beam or recommend that you have a structural engineer or architect size it. The inspector will check the size, issue a permit and check your work when you're finished framing (before you start any drywall or finish work). Sometimes a full-service lumberyard will size the beam and sell it to you. In rare cases, you may be required to enlarge existing footings beneath the support columns as well to handle the additional load. That can get costly! For more details, see "How to Identify a Bearing Wall," April '99, p. 107. To order a copy, see p. 7.

Know what's in the wall. In most cases, electrical boxes and switches can be moved or rerouted relatively easily. But plumbing pipes and heat ducts inside the wall are cause for concern. If that's the case, contact a plumber and/or heating contractor to find out exactly what's involved in eliminating or moving pipes or ductwork *before* you start tearing out drywall. Apply for an electrical permit if you have to move electrical boxes or cables.

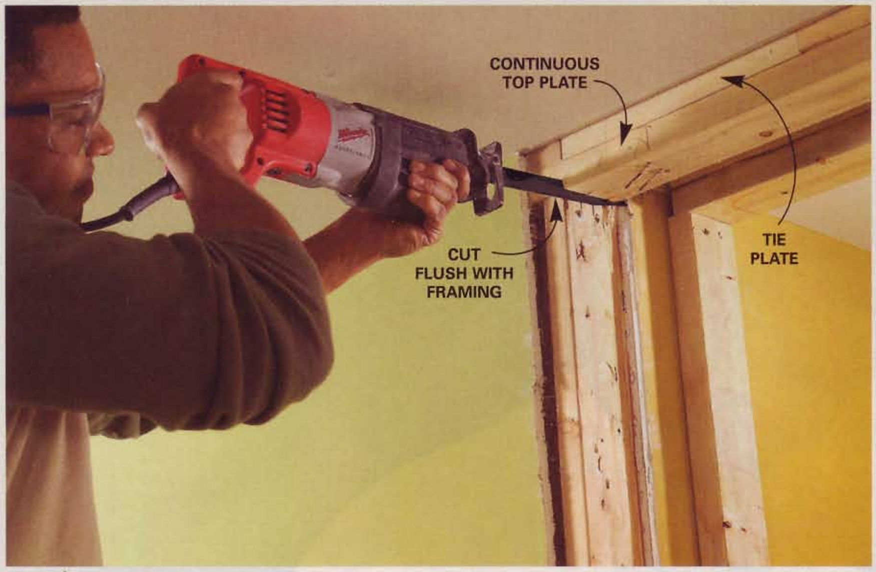
Buying the materials

Any lumberyard will be able to furnish the beam and other materials. Our 12-ft.-long beam was made from doubled 11-7/8-in.-wide x 1-3/4-in.-thick "LVLs" (laminated veneer lumber), a very common, strong type of beam that looks exactly like thick plywood boards. The beam system we show will work for nearly any opening up to 12 ft. wide. But your beam could be made from other materials ranging from simple doubled 2x12s for shorter spans to more exotic beams consisting of glued and compressed stranded wood fibers or laminated 2x4s. Don't worry—our techniques will work for whatever style beam your situation calls for.

For constructing the temporary support wall, buy three 2x4s the length of the wall for the plates and enough 2x4 studs to space them every 2 ft. (**Photo 4**). Also pick up a couple of shim packs and a 1-lb. box each of 8d and 16d nails.

Strip the drywall

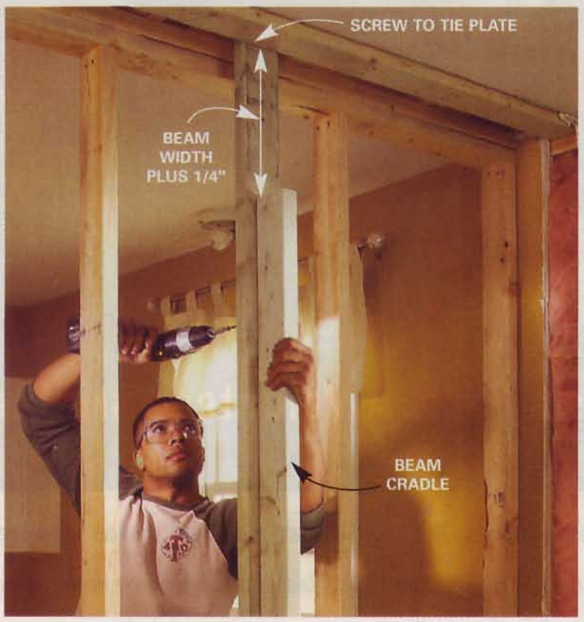
Start the project by shutting off the circuit at the main panel. Remove the baseboards on both sides of the wall and any electrical





6 Cut continuous plates and pry them free. Cut off the leftover nail shanks with a reciprocating saw.

7 Cut the nails that hold the backer studs and pry them out. You may have to pry open a gap with your chisel to reach the nails. Cut the backer stud in half to remove it.



8 Assemble two beam cradles from pairs of 2x4s and screw them to the tie plate and floor with 3-in. screws.

cover plates. Then slice through the tape at inside corners at the ceiling, and at any adjoining walls. If there aren't corners nearby, make a vertical slit just beyond the wall (**Photo 1**). Next, tear off the drywall. Take off one side first by driving a hammer claw through the drywall and simply pulling a chunk free. The first side will come off in small pieces. Loosen the drywall from the other side by rapping on the backside near the studs to free it from the screws. That way you can take off large pieces and minimize the cleanup. Now remove any outlets or switches, and disconnect the wires. Then pull the wires through any holes in the framing and cap the ends with electrical connectors to ready them for rerouting (**Photo 3**).

Build the temporary support wall

Cut a 1-ft.-wide "observation" slot in the ceiling drywall next to the wall, look for overlapping floor joists and note how far their ends lap over the wall (**Photo 3**). If the ends of the joists from one room overlap 2 in. or more, build one support wall, making it close enough to the bearing wall to support the joist ends. If the joists are single continuous boards, one wall will work as well. But if the joists are spliced end to end or if some ends don't project far enough to be supported by the temporary wall, you'll need to build two support walls, one on each side of the bearing wall. If you need a second wall, build it at least 2 ft. away from the bearing wall to leave room to work and to slide the beam into place. The second wall can be mounted directly under the drywall; there's no need to cut another slot.

To assemble the support wall, cut three plates (2x4s) 1 in. short of the full length of the wall. Tack one plate to the underside of the joists parallel to the wall and another to the floor directly below it. Tack another plate to the underside of the ceiling plate. Then cut studs to fit snugly and tack them to the plates every 2 ft. with two 8d nails at each end. Light taps from a hammer should drive them into place. If it takes serious blows to drive the studs home, you're liable to lift the floor or crack drywall joints somewhere above. If you cut a stud a little short, just drive a shim beneath it.



9 **Cut the beam to length and cut notches to clear tie plates in adjoining walls. Then slip the beam members into place and rest them on the temporary cradles.**



10 **Drive shims between the support studs and the bottom of the beam until the beams is tight against the underside of the tie plate.**

Tear out the bearing wall

Tearing out the old wall studs is just a matter of smacking the bottom of the studs with a sledgehammer (**Photo 5**) and then wiggling them free of the top plate nails. Removing the end studs is a little tougher. Use a cat's paw to pull the nails that hold the studs to adjoining framing. Then cut through the nails between the ends of the studs and the top and bottom plates with a reciprocating saw, and pull the studs free. The top or bottom plates may carry past the beam location. If so, cut them flush with the end of your desired opening (**Photo 6**). Then pry the bottom plate free of the floor with a flat bar and pry the top plate free of the tie plate. Leave the tie plate in place (unless you want your beam 1-1/2 in. higher), but cut off any leftover nail shanks from the wood.

Prepare the beam pocket

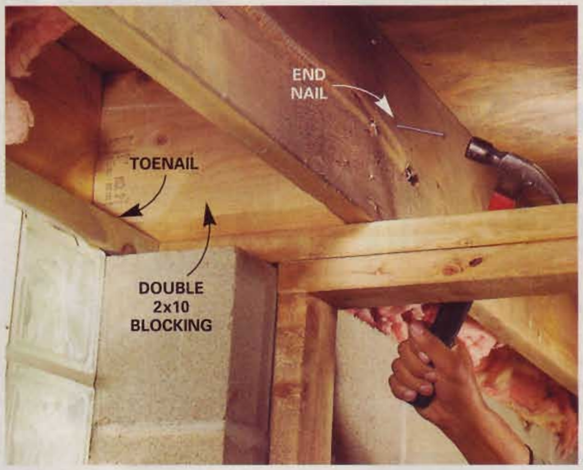
If one end of the bearing wall is perpendicular to another wall, you'll probably have to remove a stud in the other wall (**Figure A** and **Photo 7**). We'll show you how to convert this into a "beam pocket" to set the beam on later. Remove the existing blocking stud (or sometimes individual shorter blocks) by slightly prying apart the neighboring studs with a chisel or flat bar, and then cut through any nails in the gap with a reciprocating saw (**Photo 7**). Be careful when cutting: There may be cables in the wall, especially 18 in. or less above the floor, so cut with just the tip of the blade there. Drive a 2-in. drywall screw partially into the stud near the middle, then cut through the blocking stud near the screw and pull out the halves. (It's easy—if you've found and cut through all the nails!) Now the beam pocket is ready for setting the beam.

Stand the temporary beam cradles

Assemble two cradles out of pairs of 2x4s to temporarily support the beam (**Photos 8 and 9**). Make the supporting member about 1/4 in. less than the beam width so you can set the beam easily and shim it up tight to the plate on the ceiling (**Photo 10**).



11 **Cut two snug-fitting trimmers for each end of the beam. Tip them into place under the beam and tap them into place. Face or toenail each one with at least six 16d nails.**



12 **Cut blocking to fit between the floor joists directly under the trimmers at the beam ends. Toenail and end-nail the blocks to the surrounding framing.**



13 **Toenail the beam to the tie plate and to the framing at the ends with 16d nails. Nail the beam members together with three 16d nails spaced every 12 in.**

Set the beam

Cut the two beam members (LVLs) 1/2 in. short of the overall length and cut notches at the top to fit beneath the top plates in perpendicular walls (**Photo 9**). (Small notches in this spot won't weaken the beam.) You'll need help to slip the beam members into place (**Photo 9**). Then drive shims beneath both beam members until they're tight against the underside of the tie plate (**Photo 10**). With sagging ceilings, you may have to further shorten the 2x4 supports to get the beam to fit in. Once they're up, tack the beam members together to keep them aligned.

Now carefully measure and cut two 2x4 "trimmers" (permanent beam support studs; **Figure A**) for both ends of the beam. Tip the bottom into place and then drive them beneath the beam. They should fit snugly, but it shouldn't take a lot of force to drive them home. If they're too tight, trim a bit from the end. If they're too loose, cut longer ones (it's not acceptable to shim trimmers to make up the difference). Toenail or face-nail each one into place with at least six evenly spaced 16d nails.

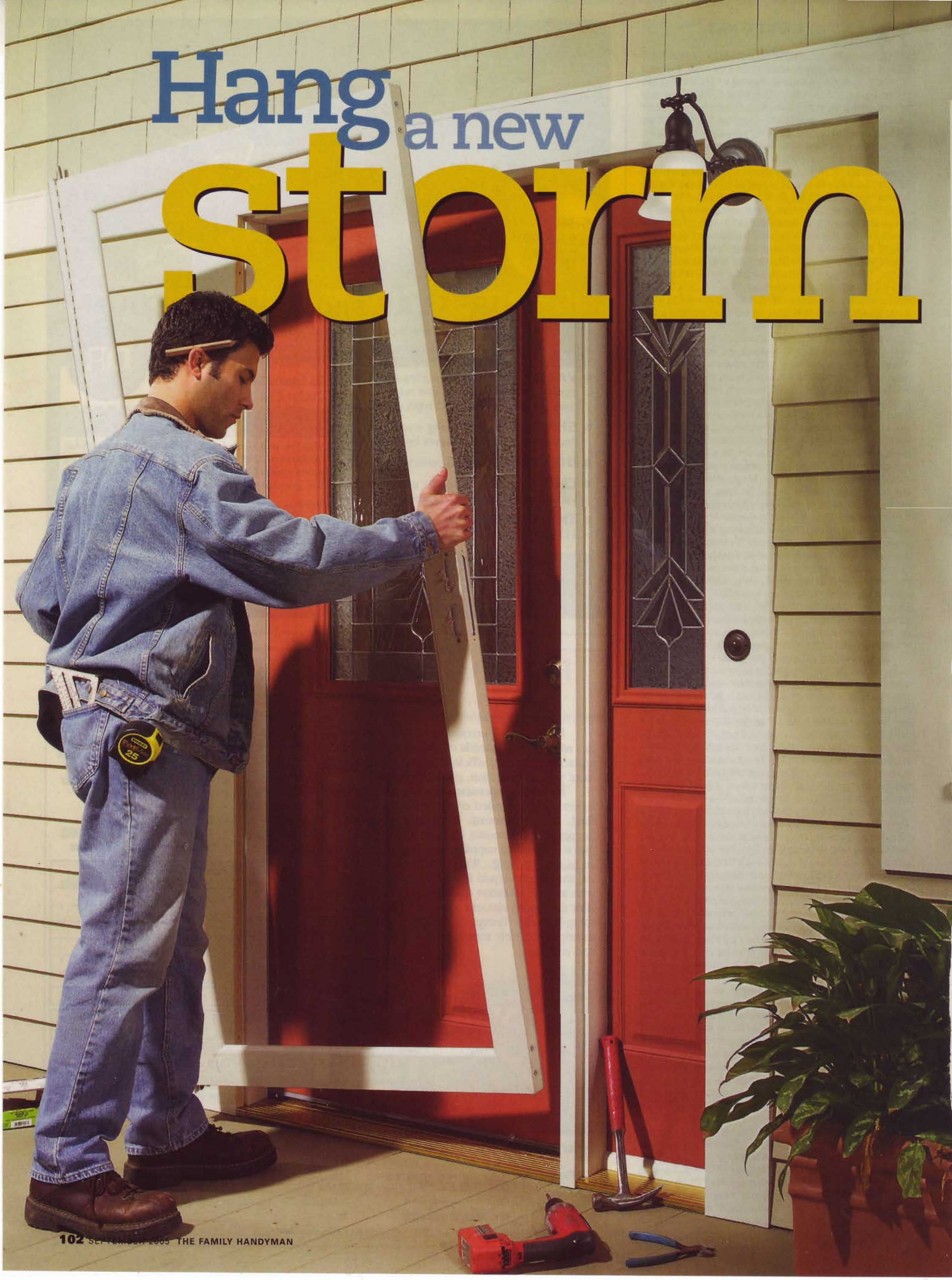
Add floor blocking and remove temporary wall

You may have to add blocking directly below each pair of trimmers (**Photo 13** and **Figure A**). Beams need solid support all the way down to another beam or the house foundation. Drive nails through the floor directly in front of the trimmers and then go beneath the floor and look for the nail shanks to determine the exact trimmer location. Use solid lumber the same thickness as the floor joists to fill the space between the subfloor and the framing below. Use at least two blocks to support the width of each pair of trimmers above (**Photo 12**). If the blocking falls over a bearing wall, add two additional studs directly under the blocking (**Figure A**).

Lock the beams tightly together with rows of 16d nails driven about every foot along the beam (**Photo 13**). Then toenail the assembly to the underside of the tie plate to keep it straight and to the framing at both ends. Finally, remove the support wall and call for a framing inspection.

Art Direction • BECKY PFLUGER
Photography • BILL ZUEHLKE
Technical Art • FRANK ROHRBACH III

Hang a new storm



door

You no longer have to put up with a rusty old storm door that bangs shut every time the kids go out. Modern storm doors are stronger, smoother and a heck of a lot more handsome than the doors we grew up with. In fact, installing a new one is one of the least expensive ways to dress up an entry.

Replacing an old one is easier than you might think. Manufacturers have made installation more DIY friendly by providing standard sizes that'll fit almost any door opening and simpler installation kits. Still, you'll find some sticking points. The following step-by-step directions walk you through some tricks and techniques you won't find in any instruction manual.

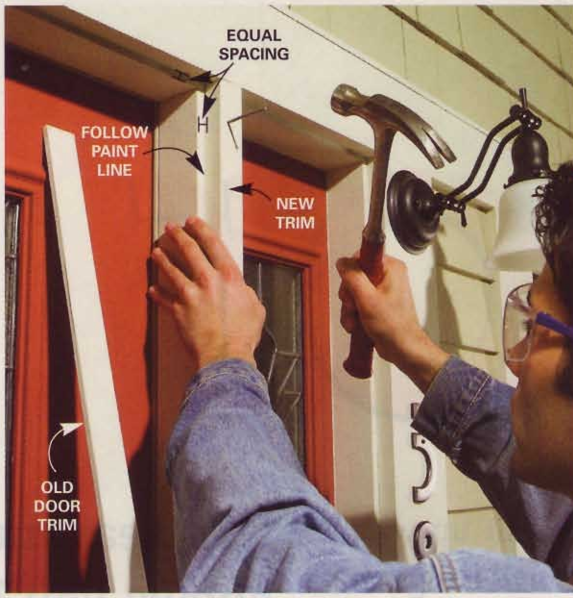
If you have a hacksaw, screw gun, a short level and a pair of side cutters and two to three hours, you're on your way to saving the $100-plus cost of a professional installation. Replacing an old storm door or installing a new one is a perfect Saturday morning project, even if you have limited carpentry skills. Choose a storm door that fits the style of your home. Prices range from $100 to $300.

Our seasoned pro shows you how to make a *perfect* installation even in less-than-perfect situations

by Travis Larson



1 **Pick a flat area near the entry door, lay the box flat on the ground, fold it open and check to make sure you have all the parts.**



2 Add a trim extension if needed to doors with sidelights. Prime and paint the new trim, position it with a reveal equal to the other trim and then nail it into place.



3 Confirm the door swing direction and fasten the hinge-side Z-bar to the correct side (if necessary). Mark a cutting line on the Z-bar 3/16 in. above the top of the door with a square. Slide the weatherstripping aside and cut the Z-bar with a hacksaw.



4 Measure from the outside lip of the threshold to the top door casing. Transfer the measurement to the bottom of the hinge-side Z-bar and cut it to length, matching the angle on the threshold.

Selecting the door

To find the size of the storm door you need, simply measure the height and width of the main door. Most front entry doors are 36 in. wide and require a 36-in. storm door.

If your entry door trim needs paint, do it now. It's a pain in the neck painting around a new door, and you'll have a crisper-looking job.

tip

In this story, we chose a "full-view" storm door (**opening photo**). The one we show has removable screen and glass panels that you interchange each season. The other common type, a "ventilating" storm door, has glass panels that slide open or closed over the screen, much like a double-hung window.

Nearly every storm door sold is reversible. That is, you can install it with the hinge on either side. The manufacturer's directions tell you how to do it. When you buy it, you don't have to specify which way the door must swing.

Use an 18- to 22-tooth-per-in. hacksaw blade for smoother, easier cuts.

tip

You typically mount storm doors to the exterior door trim using "Z-bars." The hinge-side Z-bar may already be screwed to the door (ours was), or you

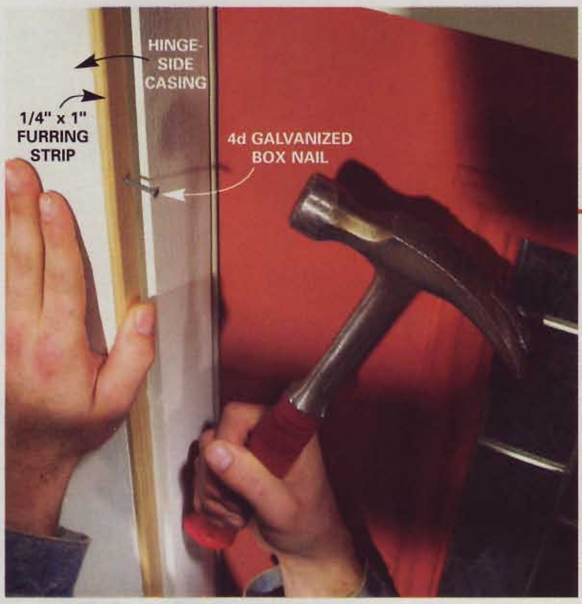
Why a storm door?

A traditional storm door was a real workhorse. It protected the handsome but vulnerable wooden main door from harsh weather and helped to insulate it.

Today's better insulated and protected main doors have little need for a storm door and are often eliminated from new homes, showing off fancy front doors. However, the "full-view" storm door (like the one we're installing here) still showcases the main door and, when screened, allows you to take advantage of those cooling summer breezes too.



5 **Center the weather-stripping in the Z-bar, then snip off the ends, leaving it 1/2 in. extra long at each end.**



6 **Measure the opening width and determine the furring strip thickness (see text). Cut a furring strip to length, then nail it to the inside edge of the hinge-side casing with four evenly spaced 4d galvanized box nails.**



7 **Lift the door into the opening and pry it against the hinge-side casing with a twist from a rubber-handled pliers on the latch side. Screw the hinge Z-bar into the door casing side.**

may have to mount it once you determine the door swing direction. On some doors, you'll also have to drill holes for the latch.

Getting started

Begin the project by folding open the box and removing the glass storm panel. Set it and the screen panel in a safe place out of the wind. Then check for damaged or missing parts by comparing the contents with the parts list in the instruction manual. (Ours had been returned, repackaged and sold as new. One of the parts had already been cut to length and the mounting screws were missing.) Use the cardboard as a work surface to prevent scratching the parts while you work on the door.

Then determine the door swing. In general, hinge the storm door on the same side as the main door. However, consider these exceptions:

- **Adjoining walls.** If there's an adjoining wall or rail, it's best to have the door swing against it; otherwise entry can be awkward, especially if you're carrying groceries.
- **Electrical.** Will the door open against any light fixtures? Will the doorbell or light switch wind up on the latch side where they belong?
- **Wind.** If there's a strong prevailing wind, it's best to have the door hinge side face the wind direction. That way, sudden gusts can't fling it open and break it.

An 8-ft. furring strip made from 1/4-in. thick pine "screen moldings" usually works fine. Find them in the millwork section at the home center. tip

Out with the old storm door

Taking off an old aluminum door is usually just a case of unscrewing the mounting screws on the door, closer and safety chain. But sometimes there's caulk around the frame. You can usually cut through the caulk with a utility knife. But worse yet, you could find old caulk between the frame and the door casing. If so, you'll have to pry the frame away with an old chisel and scrape the trim surfaces clean. A heat gun may help soft-

Dealing with warped doors

Storm doors often appear to be warped because they don't rest evenly against the weatherstripping at all corners. However, it's usually the entry door trim that's a bit out of whack. Small gaps may disappear when you install the door closers, especially if your door comes with one for the top and one for the bottom. If that doesn't do the trick, try prying out the Z-bar slightly and slip in a shim (photo below) that should close the gap.

Bigger gaps call for more drastic measures. First loosen all the Z-bar screws and remove the screws at opposite corners of the door. Then slip a shim behind the corner screws, opposite the gap. Tighten the corner screws to see if the gap closes. Try varying sizes of shims until the door closes well. Then slip in progressively smaller shims behind the rest of the screws as you tighten them to taper the gap between the Z-bar and the door casing. Cut off the shims, then caulk the gap and paint it to match.

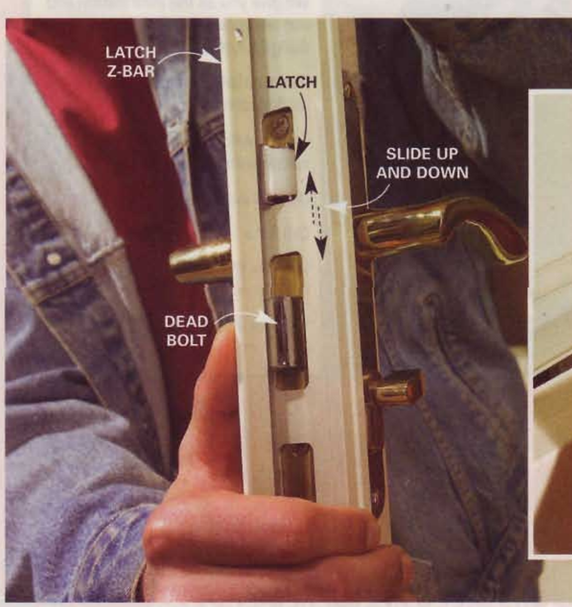




8 **Swing the door open, slip the top-side Z-bar into place and close the door to hold it. Adjust the gap between the Z-bar and the top of the door until it's even and screw it into the top casing.**



9 **Mount the latch mechanism, then mark the position of the top and bottom of the latch on the door casing. If the space between the door and the casing is over 5/8 in., nail two 1/4-in. thick furring strips to the inside of the casing, one above and one below the marks (see Photo 11).**





10 **Hold the latch-side Z-bar against the open door and center the holes on the latches. Then push the door and Z-bar against the door frame and mark and cut the bottom at the angle of the threshold. Then mark the top (inset) and cut it.**

en the caulk. Get rid of an old door by throwing the glass panel in the trash, and then cut up the aluminum frame and door with a circular saw and a carbide-tipped blade. Toss the pieces into the recycling bin.

Wooden storm doors generally have hinges that are mortised (notched into the wood) and screwed to the door casing. Don't worry about the hinge or latch recesses. When you install your new storm door, they'll be hidden behind the new door frame.

Prep the opening

Storm doors hang from the door trim, technically called "exterior casing." If the door has never had a storm door (as in our situation), you may have to extend the trim between the door and a sidelight (**Photo 2**). This is the most difficult situation you're likely to encounter. You have to rip a new trim piece to match the thickness of the other trim (usually 1-1/8 in. thick).

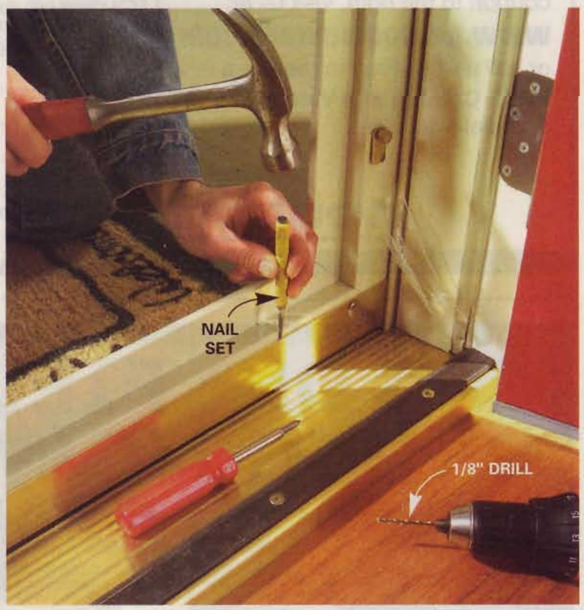
tip

Your door may come with a protective plastic film. Only peel off those areas needed for installing hardware during installation (Photos 9 and 13). That way the door will be protected from scratches. After installation is complete, peel away the plastic.

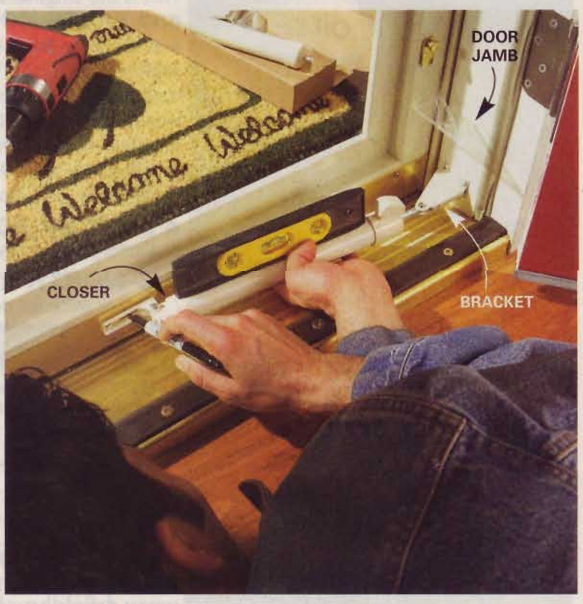
Manufacturers make storm doors a bit narrower than standard openings to make sure they'll fit. If your opening is typical, you'll have to "fur out" the sides to center the storm door in the opening.



11 **Close the door against the casing with the dead bolt extended and chisel out the wood where the deadbolt hits. Slip the latch-side Z-bar into place, close the door against it and screw it to the casing, keeping a consistent 1/8-in. gap with the door.**



12 **Slide the rubber weatherstripping into the door sweep and crimp the ends. Slide the sweep over the door bottom and tap it down to snug it to the threshold. Drill 1/8-in. holes through the adjustment slots and add the screws.**



13 **Position the closer bracket and screw it to the jamb. Attach the closer, level it and mark the screw positions on the door. Drill 1/8-in. pilot holes and screw the closer to the door. Repeat for the top closer.**

You'll nearly always need to install at least one 1/4-in. furring strip on the hinge side (**Photo 6**) and possibly even have to add another one to the latch side (**Photo 11**). To figure this out, measure the exact width of the opening, that is, the distance between the inside edges of the trim. (Measure at the middle, top and bottom.) The manufacturer's instructions will usually list the minimum width required. Subtract that width from your measurement and make the furring strip thickness along the hinge side about half the difference.

It's important to mount the door tightly to the hinge-side trim. Pry against the latch side to make sure it snugs up tight (**Photo 7**).

Follow the photos with your instructions for the rest of the installation steps. Door latch and Z-bar systems vary. Cutting the latch-side Z-bar is a bit fussy. The idea is to center it on the latch and lock (**Photo 10**). Observe where it strikes the sill and cut the bottom at an angle that matches the sill. Then cut the top so it fits against the top Z-bar. Don't worry if the latch and lock bolt end up a bit off-center, as long as they work smoothly.

You may need to chisel out the latch or deadbolt pocket as we show (**Photo 11**). It all depends on the door latch style.

After installing the door sweep and closers, adjust the closer tension. Begin with the window panel rather than the screen in place. The closers should be set with the door at its heaviest. You may want to reset a gentler setting for the screen panel.

Finally, it's a good idea to save the boxes for the window and screen panel for off-season storage. Under a bed is a great safe storage location.

Art Direction • BECKY PFLUGER
Photography • BILL ZUEHLKE
Consultant • BRUCE WILLIAMS



Windshield wiper maintenance

Stop the streaks and chatter and get back on the road—safely!

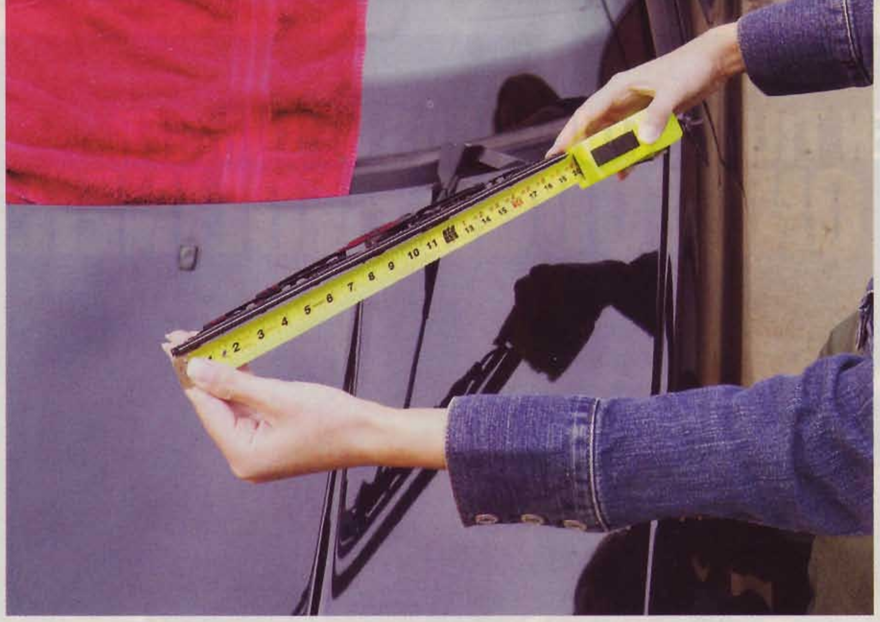
by David Radtke

When you're behind the wheel, nothing is more crucial than good visibility. But like most other drivers, I usually wait too long to replace my wipers. Wipers should be replaced every six months, especially if you park outside and you live in the desert or in other dusty conditions.

Your windshield wiper assembly consists of three basic parts: the lower wiper arm that protrudes up from the cowl, the blade that attaches to the wiper arm and the rubber refill that wipes the glass. The thin rubber refill is the part that eventually breaks down from extreme weather conditions, dust and dirt. Most often you can just replace the wiper refill ($3 each) as we show here.

However, the blade can also become weak and lose its tension against the glass or even bend slightly from ice and snow. If you have problems with chatter, or if the entire blade isn't making contact with the windshield, replace the entire blade ($10 each). Both jobs take only minutes. It's a good idea to replace the whole blade (sold with refills) every two years.

tip **You can get more life out of your wipers and keep them working effectively if you clean your windshield every time you fill up with gas. Also wipe the entire rubber insert with a moist rag to remove grit.**



Step 1

First measure your wiper blade refills to get the exact replacement length. Go to an auto parts store with your tape measure to find the exact length refills.

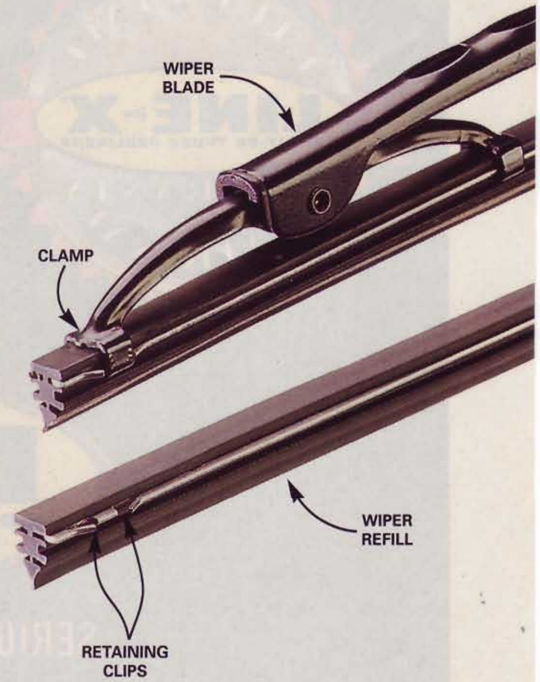
tip **Don't assume the refill inserts are the same length on the driver's side and the passenger's side. One is often an inch or more longer than the other.**

Step 2

Pull the wiper arm back from the glass, then double up a bath towel over your windshield just in case the wiper arm gets away from you and snaps back against the glass. Once the arm is pulled back, pivot the blade so the bottom of the blade flips up toward the top. Locate the small shiny retaining clips near the end of the refill. Pinch them together with a needle-nose pliers and start sliding out the refill. Once the clips slide under the blade clamp, set the pliers down and pull out the old refill with one hand while supporting the blade with the other.







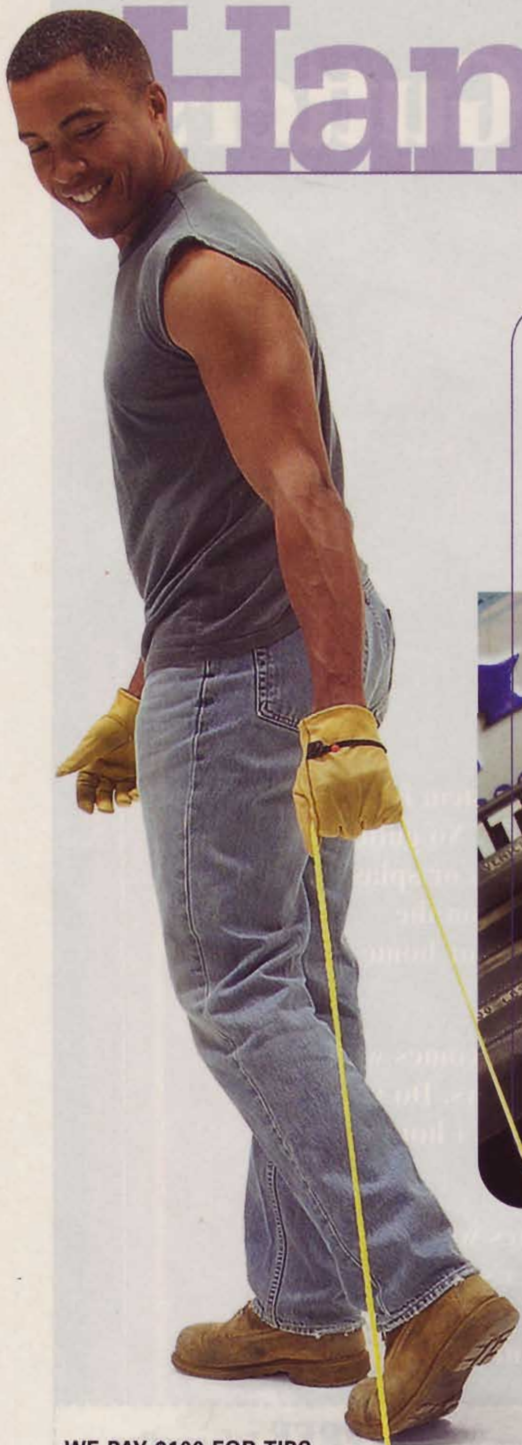
Step 3

Carefully slide the new refill into the same end you pulled the old one from. Make sure the new refill is held between each clamp (to avoid scratching your windshield) and that the retaining clip clicks into position in the last clamp. Gently pivot the arm back into position, release the arm and repeat the process for the other side.

Art Direction • DAVID SIMPSON
Photography • MIKE KRIVIT

HandyHints

FROM OUR READERS



Trailer connector protector

A trailer wiring harness dangling from your bumper is exposed to all kinds of potential damage, and the connector sockets can get filled with road grit. To protect it, pick up a magnetic key-hiding box ($4) at a home center or hardware store. Cut a shallow notch in the box to allow for the wires, enclose the plug, and stick the box to your bumper or chassis.

Ron Bachmeier



Summertime sled

A plastic sled ($12) is the cheapest form of transportation for landscaping stuff. And since the sled is at ground level, heavy cargo is easy to load up too.

Sylvia Turner

WE PAY $100 FOR TIPS

If you have a hint you'd like to share, send it to Handy Hints®, The Family Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121. Original contributions become our property upon acceptance and payment. We're sorry, but tips can't be returned.

Editor • GARY WENTZ
Art Direction • LISA PAHL KNECHT
Photography • BILL ZUEHLKE



Slam stopper

If your doors tend to slam or rattle, here's how to quiet them: Stick cabinet door bumpers to the door stop. Place the bumper wherever the door first contacts the door stop molding. A pack of bumpers costs about $2 at home centers.

Jeff Girard





Long-reach screwdriver

When you need to extend the reach of your cordless screwdriver, just pull the shaft out of a four-way screwdriver and clamp it in the chuck.

Brian Lemke

Lube up weed trimmer

If the self-feeding mechanism on your line trimmer sticks and binds, spray lubricant on the mechanism and spool. Use a lubricant that won't harm plastics. You'll get smooth, trouble-free operation.

Jeffrey Pravette





Dust catcher

Minimize the mess when you're cutting or drilling a hole in drywall. Tape a bag below the work zone to catch the dust. Use an easy-release tape to avoid wall damage.

Stuart Balderson

NewProducts

by George Vondriska

Easy installation, tough tile, cool look



Would you like to cover up an ugly concrete floor? Make your basement feel, and look, a little warmer? Tuff-Seal tiles are a cool way to dress up a floor. These great-looking tiles are a snap to install (literally), and the little bit of cushion makes them easier on your feet than plain concrete.

There are two types of Tuff-Seal tiles: Tuff-Seal Prime and Tuff-Seal Recycled. Tuff-Seal Prime, $4.60 per square foot, is made from new PVC material. (It's shown here and in our garage cover story.) It's available in nine colors and three patterns.

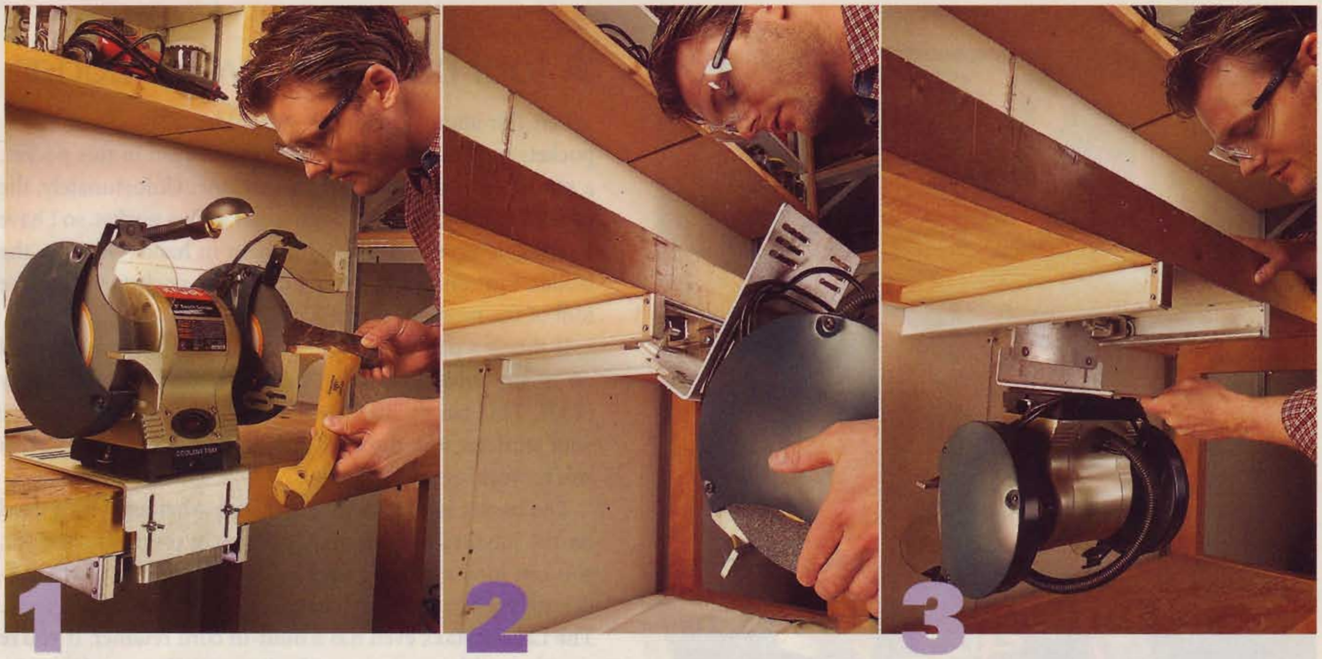
Tuff-Seal Recycled, $3.75 per square foot, is made of recycled PVC. It's available in two patterns, but in black only.

Both types come in 1/4-in.-thick, 18-in. square tiles, and they use the same installation methods. They can be installed over any flat and structurally sound wood or concrete floor.

Setting the tiles is a simple matter of snapping them together. The puzzle-like connection is such a great fit that it takes taps from a hammer to interlock the connection and seat the parts. Once together, the tile surface is watertight. If a tile becomes damaged and must be replaced, the joint can be disassembled. If you need to cut to fit, just use a utility knife. If the tiles will end in the middle of a room, you can use 12-ft. lengths of reducer strip ($21) to transition from tile to floor.

Tuff-Seal tiles are available directly from the manufacturer.

Flooring Adventures, (877) 779-2454. www.tuffsealtile.com



Under-the-bench tool storage

Some tools just don't get used that often, but there they sit, monopolizing precious bench space. The Bench Slide Mount ($150) can free up bench space in no time by allowing you to pivot and slide your tools out of the way under the bench when you're not using them. It looks like a cross between a garage door and a drawer slide.

The Bench Slide Mount has a 75-lb. capacity and is easy to install. You screw the track to the bottom of your workbench and bolt the tool to the mounting plate. The mounting plate is adjustable for workbenches of different thicknesses, from 1-3/4 in. to 4-1/2 in. The mounting plate that comes with the Bench Slide Mount measures 9 x 9-1/2 in. A 12 x 18-1/2-in. plate ($20) for larger tools is also available. Stops on the end of the track prevent the tool from tumbling to the floor as you slide it out from under the bench.

The Bench Slide Mount is available from Rockler Hardware, (800) 279-4441, www.rockler.com.

Commerce Welding and Manufacturing, (800) 527-5798. www.commercewelding.com



Universal two-cycle oil

Most garages have more than one two-cycle engine lurking in them. Chain saws, grass trimmers, leaf blowers—even some snow blowers—are two-cycles. That often means keeping several gas cans around with different oil/gas mixes for different tools. Here's good news for you serious two-cycle-engine users. Now you can can the multitude of cans! It's never been simpler.

Just use Tall Timber Universal One-Mix oil ($7.75 for six bottles). Forget about making up one gas can at 16-to-1 and another at 40-to-1. Just pour one 2.6-oz. bottle into a gallon of gas and you're good to go for any mix ratio for any air-cooled two-cycle engine.

Now all you have to decide is what to do with all those extra gas cans. Tall Timber Universal One-Mix oil (part No. 48032) is available from the company below.

USA Hardware, (763) 417-0094. www.usahardware.com



A tool basket for your ladder

When I'm about to climb a stepladder, I usually stuff my pockets with the tools du jour. A paintbrush in this pocket, a rag in that one, a scraper in that one. Unfortunately, the can of paint and the caulk gun won't fit in a pocket, so I have to struggle up the ladder with them in hand. Once on the ladder, I'm constantly patting down my pockets to find the tool of the moment. Argh!

If this is a painful reminder of the last time you worked on a stepladder, consider getting a LadderMaxx caddy ($30). This handy little basket is a great way to organize your stuff, get it to the worksite and keep it organized while you're working on the ladder.

The basket is 10 x 16 in. Fill it with whatever you'll need on the job and off you go. Once you're on the stepladder, you can loop either basket handle over the top of the ladder, giving you a handy spot to store materials and tools. The LadderMaxx even has a built-in cord retainer. If you're working with a power tool, the extension cord can be looped through the retainer so that the LadderMaxx carries the weight of the dangling cord.

Find a retailer near you by contacting the company.

Bee Safety Wise: (800) 230-5364. www.laddermaxx.com

One cool shop fridge

A fridge in the garage is an icon of neighborhood status. Fill it with your choice of cold drinks and snacks and it makes the garage your own little oasis. If you want to have the coolest-looking garage fridge on the block, you've got to have the Craftworks Garage Refrigerator ($249).

When closed, the Craftworks fridge looks just like a classic tool chest. It even includes locking casters. Open, it reveals all the amenities of a full-size fridge. It has a can stacker for 12-oz. cans, spill-proof shelves and room in the door for 2-liter bottles. It even has auto defrost. Garage-specific features include a lock on the door and a black interior (with a light) so your greasy finger smudges won't show so much.

If you live in a freezing climate and your garage is unheated, Craftworks recommends bringing the fridge into the house for the winter.

The Craftworks Garage Refrigerator is available from the manufacturer.

Craftworks, (800) 577-8041. www.craftworksfridge.com



Get a good grip



Just about every DIY project uses sheet stock, from plywood to drywall. But unless you have Shaquille O'Neal's wingspan, carrying the stuff around is enough to bring tears to your eyes. There are lots of devices on the market to help those of us who are wing-deficient get a grip. But the Gorilla Gripper, $30, has a unique approach. It latches onto the top of the sheet so you don't have to bend over to grab the bottom edge. Using the Gorilla Gripper is a little like doing bicep curls at the gym. You've got to hoist the sheet enough to get the bottom edge off the ground, and then you're ready to go. It does make it easier to handle sheet stock, but heavy stuff may require two hands just so you have the oomph to lift the sheet. The Gorilla Gripper is available from the manufacturer.

Cole Scientific, (800) 423-5008. www.gorillagripper.com



Cord-free phone headset

It's a universal law. Just as you get busy scrambling eggs or mixing paint (ideally not at the same time), the phone rings. Cordless and cell phones help, because you can take them almost anywhere. But then one hand is tied up holding the phone. Traditional headsets keep your hands free, but then you've got an umbilical cord dangling from a phone. But with the new HeadOn cordless headset ($150), which is wireless, both these annoyances disappear.

The HeadOn is made up of two components, the headset and the dongle (now there's fuel for your next Scrabble game!). The headset runs off small button batteries that, according to the manufacturer, provide 80 hours of talk time or last up to three months on standby. It comes with eight different ear gels, so you can use the one that fits your ear the best.

The dongle is fastened to the back of your phone with double-faced tape. A plug on the dongle fits into any standard phone jack. The dongle sends the signal out to the headset with a range of 50 ft.

The HeadOn is expensive compared with wired headsets, but it does everything it promises. The range was effective enough to let me move around the house without losing the signal, and I appreciated not having a headset wire dangling off my head. However, it's not fully automatic. You still have to answer and hang up the phone on the handset.

The HeadOn is available from FirstStreetOnline, (800) 704-1209, www.firststreetonline.com.

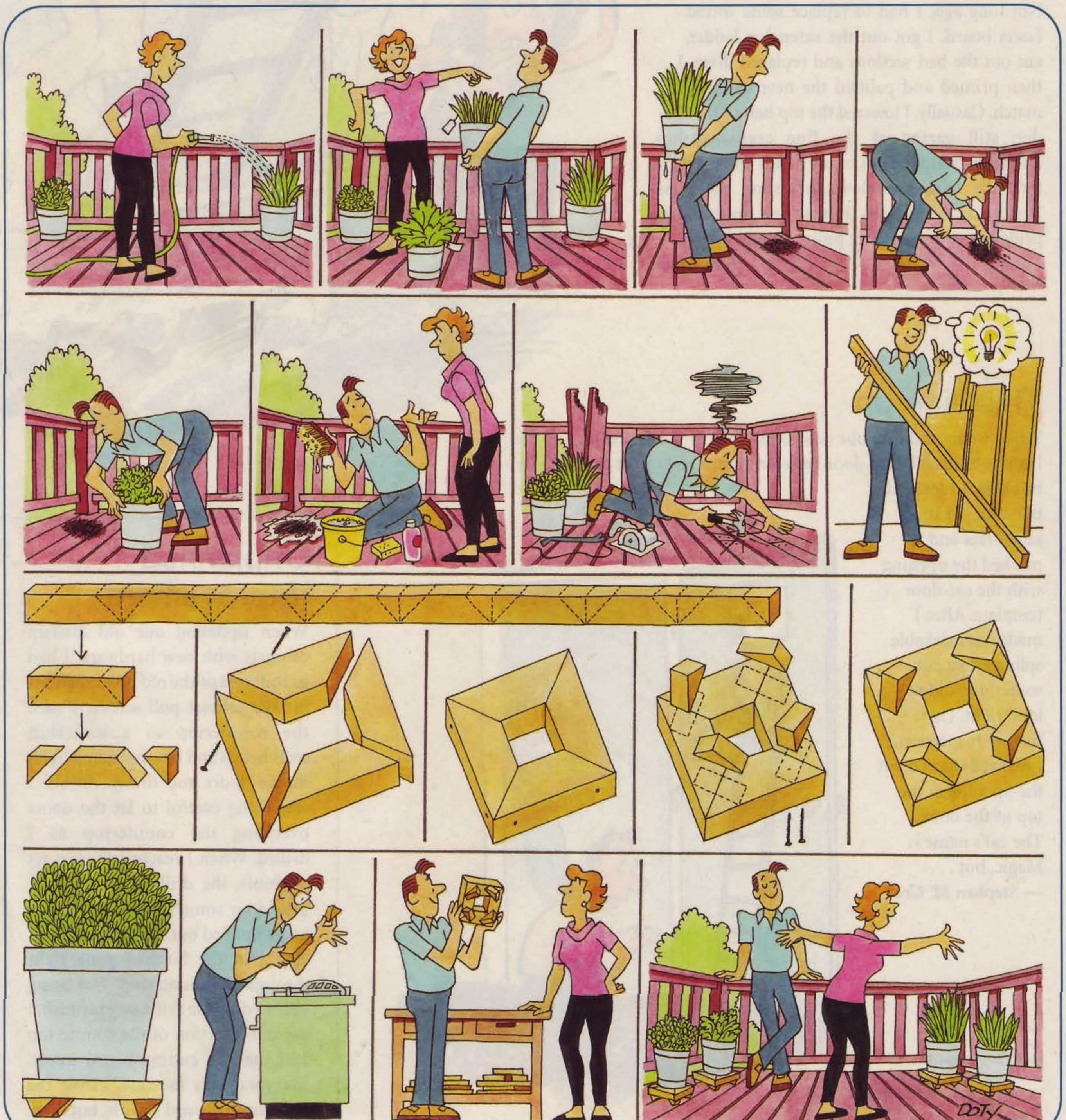
International Electronics, (360) 254-1564, ext. 290. www.internationalelect.com

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Wordless Workshop

Deck Plant Stands

by Roy Doty



Our thanks go to Eugene E. Snell, Sarasota, FL, for this idea.

We'll pay $100 for any ideas published, so send in those sketches and notes!

Submit your idea to Wordless, The Family Handyman, 2915 Commers Drive, Suite 700, Eagan, MN 55121.

Only ideas we purchase can be acknowledged. Original contributions become our property upon acceptance and payment.

GreatGoofs

Shattered dreams

Not long ago, I had to replace some rotted fascia board. I got out the extension ladder, cut out the bad sections and replaced them. I then primed and painted the new sections to match. Casually, I lowered the top half of the ladder, still gazing at the fine craftsmanship. Suddenly it slipped out of my hands and fell right into the window below, shattering the glass. Luckily, I avoided any injury, but my beaming pride has added another project to my list.

— Tom Glader



This side up

When we moved into our new house, one of the first things on the list was to install a cat door between rooms so our cat could do its business. I removed the door, set it on sawhorses and marked the opening with the cat-door template. After I made a remarkable splinter-free cut, something didn't look right. On further inspection, I realized that I'd cut the opening at the top of the door. The cat's name is Magic, but . . . .

— Stephen M. Gray



Unplanned improvement

When updating our old kitchen cabinets with new hardware, I had to shift one of the old hole locations for the cabinet pull screws. I used the countertop as a makeshift workbench and began drilling holes in the doors and drawer fronts. I was being careful to let the doors overhang the countertop as I drilled. When I reached the last set of doors, the drilling felt tougher. This door somehow seemed thicker. As I pulled out the drill, I discovered that the bit had gone right through the countertop! Not being able to disguise this nasty blemish, I cut out a section of the countertop and made a cutting board insert. Everyone tells me how clever the new cutting board inlay is, but I just nod my head and keep the rest of the story to myself!

— Charles Kaye

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Got your own do-it-yourself mistake?

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